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# Rocky Flats Environmental Technology Site

MAN-071-IWCP

REVISION 2

## INTEGRATED WORK CONTROL PROGRAM MANUAL

IMC ORGANIZATION: K-H Training and Safety Integration  
Title of Organization

Responsible Organization: Training & Safety Integration Effective Date: 3/30/00

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## CHAPTER 1 - INTEGRATED WORK CONTROL PROGRAM OVERVIEW

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### 1.1 PURPOSE

This Manual establishes requirements and process controls for the Integrated Work Control Program (IWCP) at the Rocky Flats Environmental Technology Site (Site). Activities which pose a threat to the health and safety of the public, the workers, or the environment are planned to have a set of integrated safety and compliance controls through this process.

### 1.2 SCOPE

The IWCP implements Integrated Safety Management (ISM), as defined in the *Integrated Safety Management System Manual*, and provides detailed guidance on how the five steps of ISM (Figure 1-1) are to be conducted at the Site. The acronym ISM throughout this manual is intended to include environmental requirements in addition to safety. This Manual:

- Identifies the regulatory requirements for work activities (other programs such as Environmental Compliance, Safety & Industrial Hygiene and Nuclear Safety have requirements that must be integrated into the process controls of this Manual, but these are not duplicated in this Manual)
- Provides a summary and guidance for implementing ISM
- Provides a chapter summary for selection of the proper tools depending on the work activity work scope
- Describes methods and controls to identify and screen an activity for the purpose of identifying the proper level of planning
- Describes methods and the controls for the selected planning method to identify the hazards, develop the specific activity controls, and implement the specific activity controls
- Describes methods and the controls to select and use the appropriate vehicle for establishing the work implementing methodology
- Describes methods and the controls for developing operations and technical activity procedures and work plans
- Describes methods and controls to perform preventive maintenance operations, emergency work, and minor maintenance
- Prescribes contingency planning for abandonment or significant delay of a process or activity
- Provides a mechanism for feedback to ensure continuous improvement through the use of a Post Job Review (PJR)

### 1.3 APPLICABILITY AND USE

This Manual identifies mandatory elements and requirements by using the word “**SHALL**”. Any deviations from **SHALL** statements require prior written approval from the Kaiser-Hill (K-H) IWCP Program Manager. Additionally, the Manual uses the word “**Should**” to indicate a recommendation that is based on standards and good business practices. The word “**may**” is used when permission is granted rather than constituted as a recommendation or requirement.

This Manual applies to **all** Site employees and subcontractors performing or supporting onsite work. Additionally this Manual applies to Site employees conducting Site work at offsite locations unless the work is specifically governed by a subcontract. The requirements of this Manual **SHALL** be used for all planning activities begun after the effective date of this Manual.

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For those work activities whose planning was completed or initiated prior to the effective date of this Manual, the Responsible Manager (RM) **SHALL** re-screen the activity using the Activity Screening Form – Appendix 2.2 and make any necessary planning changes in accordance with the requirements of this Manual. Additionally, any exceptions to the requirements of this Manual must be granted in writing by the K-H IWCP Program Manager.

## 1.4 BACKGROUND

The IWCP is the method by which all applicable Site infrastructure programs and requirements, such as health and safety, environmental, engineering, nuclear safety, criticality safety, procurement, radiological, and quality, are integrated into work planning to develop a sound set of safety and compliance controls and these controls are implemented on the job. It provides a single integrated process through which all work on the Site is performed. It ensures that the work is screened consistently to uniform criteria and that hazards are appropriately analyzed and controlled.

The Department of Energy (DOE) requires contractors to integrate environment, safety, and health into work planning and execution. This requirement is implemented through the Department of Energy Acquisition Regulations ISM clause. Either this clause, or an approved Site clause that is substantially the same and meets the intent of Department of Energy Acquisition Regulations clause **SHALL** be in all contracts. This clause states:

“INTEGRATION OF ENVIRONMENT, SAFETY, AND HEALTH INTO  
WORK PLANNING AND EXECUTION (JUN 1997)

- (a) For the purposes of this clause,
  - (1) Safety encompasses environment, safety and health, including pollution prevention and waste minimization; and
  - (2) Employees include subcontractor employees.
- (b) In performing work under this contract, the contractor shall perform work safely, in a manner that ensures adequate protection for employees, the public, and the environment, and shall be accountable for the safe performance of work. The contractor shall exercise a degree of care commensurate with the work and the associated hazards. The contractor shall ensure that management of environment, safety and health (ES&H) functions and activities becomes an integral but visible part of the contractor's work planning and execution processes. The contractor shall, in the performance of work, ensure that:
  - (1) Line management is responsible for the protection of employees, the public, and the environment. Line management includes those contractor and subcontractor employees managing or supervising employees performing work.
  - (2) Clear and unambiguous lines of authority and responsibility for ensuring ES&H are established and maintained at all organizational levels.
  - (3) Personnel possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.
  - (4) Resources are effectively allocated to address ES&H, programmatic, and operational considerations. Protecting employees, the public, and the environment is a priority whenever activities are planned and performed.
  - (5) Before work is performed, the associated hazards are evaluated and an agreed-upon set of ES&H standards and requirements {i.e., safety controls} are established which, if properly implemented, provide

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- adequate assurance that employees, the public, and the environment are protected from adverse consequences.
- (6) Administrative and engineering controls to prevent and mitigate hazards are tailored to the work being performed and associated hazards. Emphasis should be on designing the work and/or controls to reduce or eliminate the hazards and to prevent accidents and unplanned releases and exposures.
  - (7) The conditions and requirements to be satisfied for operations to be initiated and conducted are established and agreed-upon by DOE and the contractor. These agreed-upon conditions and requirements are requirements of the contract and binding upon the contractor. The extent of documentation and level of authority for agreement shall be tailored to the complexity and hazards associated with the work and shall be established in a Safety Management System.
- (c) The contractor shall manage and perform work in accordance with a documented Safety Management System that fulfills all conditions in paragraph (b) of this clause at a minimum. Documentation of the System shall describe how the contractor will:
- (1) Define the scope of work;
  - (2) Identify and analyze hazards associated with the work;
  - (3) Develop and implement hazard controls;
  - (4) Perform work within controls; and
  - (5) Provide feedback on adequacy of controls and continue to improve safety management.”

Therefore in this Manual ISM refers to environment, safety & health. Figure 1-1 pictorially demonstrates the relationship between ISM and IWCP.

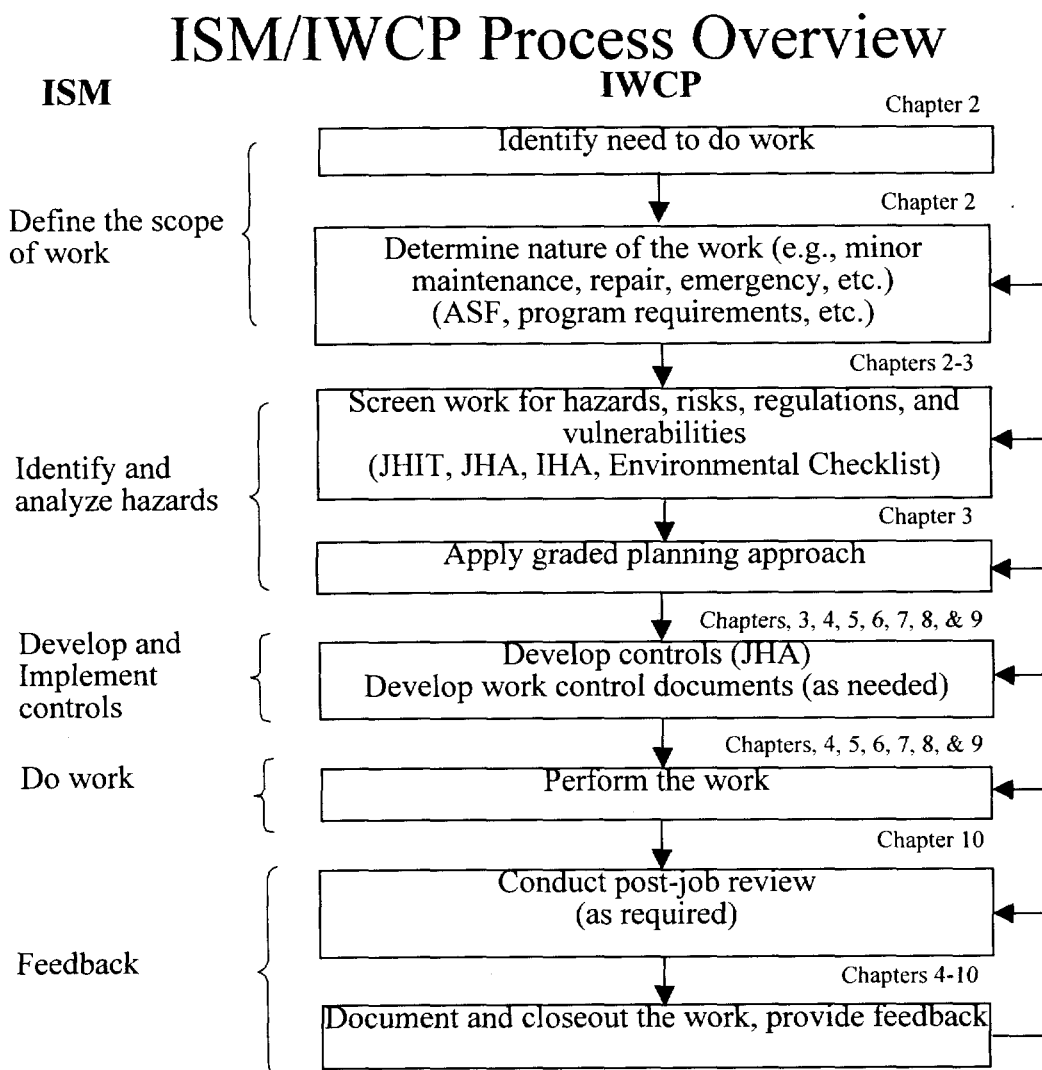
## 1.5 CHAPTER SUMMARY

This section provides a synopsis of the uses for each of the succeeding chapters. This Manual is written to be followed sequentially from Chapters 1-3 for most work activities, but it is not intended to be a sequential flow document starting at Chapter 4 and proceeding through the Manual. Users **SHALL** refer to Appendix 1.1, “Flow Charts,” as well as the instructions contained in this Manual for the overall Site work processes. Appendix 1.2, “Requirements,” provides a list of the external standards and requirements that drive the IWCP. Appendix 1.3, “Training Guidelines,” provides the guidelines for training, and provides a perspective of how training fits into the overall ISM system and IWCP processes. Organizations in this Manual are identified generically (i.e., Environmental, Safety & Health, etc.) so that the function can be performed by either the K-H or subcontractor organization, as appropriate. See Appendix 1.1 for an overview of the IWCP process.

Each work activity under the control of this Manual involves differing circumstances where a chapter can be used first in one instance, and a different chapter used first in another. The overview provided by this chapter is intended to:

- Provide the user with a general understanding of all the chapters
- Show how Site work is implemented from identification of a work activity to work closeout
- Provide an overview to show that all ISM requirements have been addressed

Figure 1-1



### 1.5.1 Chapter 2 – Work Initiation and Screening

Chapter 2 provides the instructions for identifying an activity via a Work Control Form (WCF). The WCF **may** be initiated by any employee identifying a deficiency or need for the performance of work. Also provides the criteria and instructions for completing the Activity Screening Form (ASF). The ASF is used by the RM to categorize work activities according to their hazards (low, medium, high, or passes the prescreen) and identifies the required organizations that need to be involved in the planning process. The ASF is also performed a “second” time as one of the last steps in scheduling work for performance, at which point the Work Control Document (WCD) will normally pass the prescreen.

### 1.5.2 Chapter 3 – Work Planning & Hazard Analysis Process

Chapter 3 provides the instructions for conducting the three levels of work planning, as determined by the ASF. Chapter 3 also provides the instructions for completing a JHIT and a Job Hazard Analysis (JHA) which are required for all three levels of work planning. The instructions and guidelines for conducting a more detailed Integrated Hazards Assessment (IHA) for more highly complex or hazardous activities is also contained in Chapter 3. This Chapter is the only approved process for conducting work related job hazards analyses.

### **1.5.3 Chapter 4 - Work Package Process**

Chapter 4 provides the criteria and instructions for conducting work via the Type 1 and Type 2 Work Packages (WP) including format and approval requirements, conduct of work, change control, and close-out. A Type 1 WP is generally used for activities where engineering design is not required, while a Type 2 WP contains input from an approved engineering design package.

### **1.5.4 Chapter 5 – Standard Work Package Process**

Chapter 5 provides the criteria and instructions for developing and using Standard Work Packages (SWP). These are WPs that are used on a repeating basis and may include troubleshoot and repair (TS&R) activities.

### **1.5.5 Chapter 6 – Work Plans and Procedures**

Chapter 6 provides the criteria and instructions for conducting work via Work Plans and Procedures (WP&Ps) including formatting and approval requirements, conduct of work, change control, and closeout. This Chapter contains a table to help determine additional governing documents, permits or agency agreements required for the development of the WP&Ps. A significant amount of work is accomplished on Site which does not require the use of a traditional WP. Therefore this Chapter is used as a means to capture those processes and activities which do not require the use of a WP, thereby ensuring they follow the requirements of the IWCP to ensure the functions and elements of ISM are incorporated.

### **1.5.6 Chapter 7 - Preventive Maintenance Process**

Chapter 7 provides the criteria and instructions for the development and control of Preventive Maintenance activities including formatting and approval requirements, conduct of work, change control, and closeout.

### **1.5.7 Chapter 8 - Minor Maintenance Process**

Chapter 8 provides the criteria and instructions for conducting minor maintenance activities. This chapter also includes a pre-approved JHA matrix for all minor maintenance tasks to allow for work implementation consistent with this Manual's requirements with minimal paperwork. This Chapter is also considered the work document, so no other work document is required.

### **1.5.8 Chapter 9 - Emergency Work Process**

Chapter 9 provides the criteria and instructions for performing and documenting emergency work. This chapter uses an Emergency Action Work Log (EAWL) which provides a standardized format for documenting emergency work. Emergency work is the only work activity which bypasses the ASF. This Chapter identifies hazards and develops controls appropriate for the urgent nature of this work.

### **1.5.9 Chapter 10 - Post Job Review Process**

Chapter 10 provides guidance for performing PJRs, along with the criteria to determine when a PJR is required. The fifth element of ISM is feedback, which improves work by providing a means to identify, communicate, and suggest document and work performance improvements. A significant amount of very effective informal feedback occurs throughout the work planning and execution process. This Chapter includes methods for workers to provide formal feedback to help identify strengths and weaknesses in order to improve work control processes.

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## 1.5.10 Chapter 11 – References

Chapter 11 provides a list of references used throughout the Manual.

## 1.6 DEFINITIONS

This is a list of terms and definitions used throughout the Manual. If a definition is not included, the definitions in the RFP Dictionary apply.

**Activity.** A defined scope of work for designation of controls to maintain an adequate margin of safety against the hazards or other uncertainty presented by the work.

**Administrative Controls.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Administrative Request.** A request for administrative support of maintenance, e.g., SWP, Preventive Maintenance Work Package (PMWP).

**Authorization.** The granting of approval to operate a facility or process in accordance with the terms and conditions of a set of authorization controls. A regulator or legal authority provides authorization.

**Basis.** Summary statement of the reason for the administrative and engineered controls, the administrative control program and the associated surveillance requirements. The Basis relates the credited assumptions made in the accident analysis to the requirements for safe operation.

**Basis for Interim Operation.** A nuclear facility safety basis document that establishes the interim safety basis for a facility by summarizing and referencing existing information and, where necessary, by generating new information [DOE-STD-3011-94].

**Basis for Operation.** A nuclear facility safety basis document that establishes the safety basis for a facility through use of the necessary and sufficient process for evaluation of hazards and development of nuclear safety controls.

**Bill of Material.** Form that contains a technical description for items performing maintenance or modification work.

**Caution Statement.** A statement to alert the user to possible equipment damage. The caution precedes the step or steps to which it applies. Cautions do not contain action steps. For emphasis, the caution is enclosed in a box and labeled **CAUTION**.

**Compliance Control.** A physical or administrative control to ensure compliance with environmental regulations, safeguards and security requirements, DOE Orders, and other requirements that do not directly impact worker or public safety.

**Comprehensive Environmental Response, Compensation and Liability Act.** CERCLA was enacted by Congress in 1980 to respond to situations involving the past disposal of hazardous substances.

**Construction.** For purposes of this document, the term referring to Decontamination and Decommissioning (D&D), new or modified construction, and remediation work performed on Site.

**Contractor's Technical Representative.** See APR-111, Acquisition Procedure for Requisitioning Commodities and Services.

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**Corrective Maintenance.** The repair or rework of failed or malfunctioning equipment, system, or facilities to restore the intended function or design condition. This maintenance does not result in a significant extension of the expected useful life. (DOE 4330.4B, Attachment 1)

**Davis-Bacon Covered Work.** Work that is covered under the provisions of the Davis-Bacon Act, and is considered to be construction type work and cannot be assigned to contractor or subcontractor's maintenance forces.

**Decontamination and Decommissioning.** Encompasses an overall process from planning to demolition and cleanup - includes deactivation, decommissioning, dismantlement, and demolition.

**Design Basis.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Design Intent.** Purpose for which a plan of execution for construction, maintenance, modification, or repair activities were formulated (i.e., fire protection, ventilation supply, heating, etc.).

**Design Performance Criteria.** See 1-W51-COEM-DES-210, Site Engineering Process Procedure.

**EM/Preventive Maintenance (PM) Administrator.** The individual assigned to oversee the Maintenance Management System.

**Environmental Degradation.** Conditions adverse to the safety of the environment that can impact personnel and public safety within and outside of the Site's boundaries.

**Equivalent Item.** A part or component that is an equivalent to the item being replaced as established by the performance of an Item Equivalency Determination.

**Facility.** Any equipment, structure, system, process, or activity that fulfills a specific purpose. The definition of facility most often refers to buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein to delineate a facility. However, specific operations and processes independent of buildings or other structures (e.g., waste retrieval and processing, waste burial, remediation, groundwater or soil decontamination, decommissioning) are also encompassed by this definition. For the purpose of this procedure, the facility designation is expanded to include any formally designated building, site, structure, area, or project (such as Building 371, Pads, Tents, or Ponds) where a formal work authorization must be granted prior to conducting work.

**Graded Approach.** A process by which the level of analysis, documentation, and actions necessary to comply with a requirement are commensurate with:

- Relative importance to safety, environment, safeguards, and security
- Magnitude of any hazard involved
- Life-cycle stage of the facility or activity
- Programmatic mission of the facility or activity
- Particular characteristics of the facility or activity
- Other relevant factors, as appropriate

**Hazard.** A source of danger (i.e., material, energy source or operation) with the potential to cause illness, injury, or death to personnel or damage to a facility or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation).



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**Hazard Analysis.** The determination of material, system, process, and facility characteristics that can produce undesirable consequences, followed by the assessment of hazardous situations associated with a process or activity leading to the development of safety controls. Largely qualitative techniques are used to pinpoint weaknesses in design or operation of the facility that could lead to accidents (e.g., JHA, ALARA Review).

**Hazard Categories.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Hazardous Material.** Any solid, liquid, or gaseous material that is toxic, explosive, flammable, corrosive, or otherwise physically or biologically threatening to health. Oil is excluded from this definition. Solid, liquid, or gaseous substances in quantities that either alone, when combined with another substance through a credible mechanism, or when coming in contact with an available energy source, are determined to be capable of posing an unacceptable risk to the environment or to the health and safety of the workers or the public. This includes radiological, non-radiological and mixed materials that are toxic, explosive, flammable, corrosive, or otherwise physically or biologically health threatening.

**Health and Safety Plan.** A written document prepared by the subcontractor that includes the subcontractor's proposal for implementing Site construction health and safety requirements, identification of subcontractor supervisor personnel, competent persons and qualifications responsible for health and safety performance, and proposed construction site health and safety orientation.

**Hold Point.** A step in the work package where work is not allowed to proceed until the step is complete and signed, e.g., inspection point, verification point.

**Inspection.** Examination or measurement of an activity to verify conformance to specific requirements.

**Integrated Safety Management.** ISM is the systematic integration of safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of environment, safety and health into work planning and execution resulting in a set of integrated safety and compliance controls for the work.

**Integrated Work Control Program.** The primary mechanism for institutionalizing ISM into the work planning, management, and control processes and is used to control all work conducted at the Site. It ensures that work is screened and planned consistently to uniform criteria and that hazards are appropriately analyzed and controls identified and implemented.

**Job Hazard Analysis.** A documented process whereby the steps for a work activity are analyzed for a set of safety controls defined prior to the work being performed.

**Job Hazard Identification Tool.** A checklist used by a planning team to assist in identifying potential hazards associated with a work activity, and to identify additional subject matter expertise required to be involved in analyzing hazards and recommending associated controls.

**Like for Like.** A part or component which is the same as the part being replaced.

**Line Management.** Line Management includes those contractor and subcontractor employees responsible for planning, managing, or supervising employees performing work.

**Maintenance Management System.** A Sitewide computerized system for the tracking of Preventive Maintenance which contains the equipment, plan, work order, and history information for specific components.

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**Modification.** Any change, addition, or alteration to a system, structure or component that alters the design basis (e.g. flow rates, seismic strengths, delta pressures, control parameters, program sequence, load carrying capacity, response time, fire suppression/detection capabilities, shielding, criticality spacing, corrosion resistance). Use of like for like or equivalent item is not a modification.

**Nonconformance Report.** A report used to document the identification, disposition, and correction of nonconforming items or activities.

**Notes.** A statement that provides important supplemental information. Notes can pertain to action steps. When associated with action steps, the note precedes the step or steps to which it applies. Notes do not contain action steps.

**Nuclear Activity.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Nuclear Facility.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Nuclear Facility Authorization Basis (AB).** Those aspects of the hazard category 2 and 3 nuclear facility design basis and operational requirements relied upon by DOE to authorize operation. These aspects are considered to important to the safety of the facility operations. The AB is described in documents such as the facility Safety Analysis Report and other safety analyses, hazard classification documents and the TSRs, DOE-issued safety evaluation reports, and facility-specific commitments made in order to comply with DOE rules, Orders, or policies.

**Operational.** The terminology used for a system or component that is capable of performing its intended function in the required manner upon demand.

**Operational Safety Requirement.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Out of Service.** The terminology used for equipment, components, and systems that are not available for operation for any given reason, and are intended to be returned to service.

**Planning Team.** The multi-disciplined team assigned the responsibility of planning the work for both the Medium and High Planning Levels. This Team can include engineers, planners, managers, crafts, SMEs and safety and health professionals.

**PM Coordinator.** The individual/individuals assigned by the company to administrate that company's preventive maintenance program.

**Post-maintenance Testing.** Action taken to verify that equipment or components are operating correctly and fulfilling their design functions when returned to service following the completion of work.

**Preventive Maintenance.** Includes periodic and planned maintenance actions taken to maintain a piece of equipment within design operating conditions and extend its life and is performed prior to equipment failure or to prevent equipment failure. This includes technical specifications surveillance, in-service inspections, and other regulatory forms of preventive maintenance.

**Project Management Plan / Project Execution Plan.** These are used synonymously throughout this Manual. They define the project charter, work plan, and requirements implementation. The charter includes the project vision, mission and critical success factors. The work plan includes the work breakdown structure (WBS), responsibility assignment, scope of work, estimated schedule, estimated cost for the project, and project controls.

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**Project Team.** Participants on a project including the Program Manager, Project Manager, Project Engineer, Building/User Representatives, Contractor Representative, Construction Engineer, appropriate subject matter expert(s), and other personnel assigned to the project.

**Public.** All individuals outside the DOE Site boundary.

**Quality Assurance Plan.** A formal document describing necessary quality assurance, quality control, and other technical activities that are implemented to ensure that the results of the work performed will satisfy the stated performance criteria.

**Quality Record.** A document that furnishes objective evidence of the quality of items or activities and that has been verified and authenticated as technically complete and correct. Records may include photographs, drawings, magnetic tape, and other data recording media.

**Remedial Investigation/Feasibility Study.** The remedial investigation is the process to determine the nature and extent of the problem presented by a release. The feasibility study to develop and evaluate options for remedial action. The RI emphasizes data collection and site characterization while the FS emphasizes data analysis.

**Remediation.** Activities conducted to reduce potential risks to people and/or harm to the environment from radioactive and/or hazardous substance contamination.

**Repair.** The process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item still does not conform to the original requirement.

**Responsible Manager (RM).** The manager directly responsible and accountable for the development, implementation, and performance of the work (e.g., Facility Manager, Building Manager, Operations Manager, Maintenance Manager, Engineering Manager, and/or Project Manager).

**Responsible Organization.** The organization that is assigned to have the primary or lead responsibility for the resolution of a deficiency or completion of a required action on a Work Request or Administrative Request. The Responsible Organization can be any site organization, including that of the originating RM.

**Rework.** The process by which an item is made to conform to the original requirements by completion or correction.

**Safety Analysis Report.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Safety Basis.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Safety-Class Structures, Systems, and Components.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Safety Control.** A functional capability or performance level of a structure, system, component, or administrative system required to:

1. Prevent the interaction of a hazard with the public, worker, or the environment, or
2. Mitigate the consequences of the interaction of a hazard with the public, worker, or the environment.

**Safety Equipment.** A piece of equipment, personal protective equipment (PPE), system, etc. that controls hazards to an acceptable level of risk so that if used properly, there is a "practical certainty" that no harm will result to exposed workers, the public, or the environment. This

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includes engineered hazard controls, etc. but does not include administrative or procedural controls. For nuclear facilities, this definition includes the definition of safety-class and safety-significant structures, systems, and components as defined by the Nuclear Safety Manual.

**Safety Management Programs.** The safety management programs comprise the safety infrastructure at the Site, and address three major areas: (1) appropriate control of radiological and hazardous material hazards, (2) regulatory compliance, and (3) good engineering and management practices.

**Safety-Significant Structures, Systems, and Components.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Scope.** Statement specifying the performance boundaries of the work activity to be executed (e.g., remove/install piping, run conduit, install fire control panel).

**Scope of Work.** Refers to the project or activity baseline that defines technical objectives and general approaches in terms of design, execution, and performance requirements, criteria, and characteristics derived from what the project is intended to accomplish.

**Site.** An area of land that contains a DOE facility or facilities or is either owned or leased by DOE or the Federal government. A DOE Site and facility may or may not have the same boundaries. The general public may or may not have access. When capitalized, i.e., Site, the word is used as an acronym for the Rocky Flats Environmental Technology Site.

**Skill-of-the-Craft.** Those skills that a craftsman/technician should be able to perform commensurate with his/her skill training without specific task instructions (i.e., instruct craft to install hot water heater element without providing detailed instructions).

**Source Document.** Documents or references that support, initiate, or cross-reference the Work Control Form. These documents **may** include:

- Requirement documents (such as DOE orders, Engineering specifications, or administrative or technical procedures)
- Deficiency corrective action documents (such as audits, self-assessments, Non-Conformance Reports, safety concerns, or Occurrence Report actions)

**Specification.** See 1-W51-COEM-DES-210, Site Engineering Process Procedure.

**Standard Work Package.** A pre-approved WP prepared for a repetitive maintenance action and authorized to be used on a recurring basis with RM or Shift Manager (SM) approval.

**Statement of Work.** Describes the essential and technical requirements for items, materials, or services to be provided.

**Technical Procedure.** See PRO-815-DM-01, Developing, Maintaining and Controlling Documents.

**Training.** Initial and continuing training programs implemented to ensure that personnel are qualified to the performance requirements of the job.

**Unreviewed Safety Question.** See 1-MAN-018-NSM, Nuclear Safety Manual.

**Unreviewed Safety Question Determination.** See 1-MAN-018-NSM, Nuclear Safety Manual.

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**Verification Point.** A step in the work package that ensures a condition conforms to the specified requirements and the process cannot proceed without first completing this step. (i.e. verification of Lockout/Tagout (LO/TO)).

**Warning Statement.** A statement to alert the user to possible personal injury or environmental damage. The warning precedes the step or steps to which it applies. Warnings do not contain action steps. For emphasis, a warning is enclosed in a box and labeled **WARNING**.

**WCF Database.** A sitewide computerized system for tracking the status of a Work Request or Administrative Request initiated on the WCF (also see Maintenance Management System).

**Witness Point.** A step in the work package that requires someone other than the person performing the task to actually watch the task take place.

**Work.** Any physical project or effort that has the potential to produce damage to the environment, injury to the public or worker in the event of an accident or process upset.

**Work Authorization Process.** The planning and preparation for the conduct of an activity, which result in a documented safety basis and a verifiable ready to proceed status.

**Work Control Documents.** Those documents that are used directly to perform tasks in preparation for or in the performance of an activity, such as IWCP work packages, technical procedures, and Preventive Maintenance Work Orders.

**Work Control Form.** The form utilized to initiate, process, and assign a Work Request or Administrative Request to the Responsible Organization.

**Work Control Number.** The unique computer-generated number, or authorization charge number, obtained from the Work Control Database and assigned to a specific WCF for purposes of tracking work governed by the IWCP.

**Work Request.** A request for new construction, modifications, or improvements to equipment, facilities, or plant grounds.

**Worker.** Persons working in the immediate area of concern within the process safety management control of a given facility or activity. For the purposes of this document, the term "workers" is meant to be all inclusive, and includes all workers such as the facility workers, co-located workers, contractors, subcontractor employees, and visitors.

## 1.7 ACRONYMS

AB	Authorization Basis
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
ASF	Activity Screening Form
BOM	Bill of Material
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
COOP	Conduct of Operations
CRIT	Criticality Engineering
D/B	Davis Bacon
D&D	Decommissioning & Decontamination
DOE	Department of Energy
EAWL	Emergency Action Work Log
EDP	Engineering Design Package

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EM/PM	Equipment Maintenance/Preventive Maintenance
ENG	Engineering
ES&H	Environmental, Safety & Health
FD	Fire Department
FI	Facilities Inspection
FP	Fire Protection
FSAR	Final Safety Analysis Report
FSC	Firearms Safety Committee
H&S	Health and Safety
H&SP	Health and Safety Practice Manual
HEPA	High Efficiency Particulate Air filter
HVAC	Heating, Ventilation, and Air Conditioning
IH	Industrial Hygiene
IHA	Integrated Hazards Assessment
ISM	Integrated Safety Management
IWCP	Integrated Work Control Program
JHA	Job Hazards Analysis
JHIT	Job Hazard Identification Tool
K-H	Kaiser Hill Company, LLC
LL/GI	Lessons Learned/Generic Implications
LL/LLM	Low level waste/low level mixed waste
LO/TO	Lockout/Tagout
LS/DW	Life Safety Disaster Warning System
MAORF	Master Agreement Order Receiving Form
MSDS	Material Safety Data Sheet
N/A	Not Applicable
NS	Nuclear Safety Engineering
ORC	Operations Review Committee
OS&IH	Occupational Safety & Industrial Hygiene
OSHA	Occupational Safety & Health Administration
OSR	Operational Safety Requirement
PCB	Polychlorinated Biphenyl
PJR	Post Job Review
PL	Procurement Level
PM	Preventive Maintenance
PMCR	Preventive Maintenance Change Request
PMT	Post Maintenance Test
PMWP	Preventive Maintenance Work Package
PPE	Personal Protective Equipment
PRC	Plant Review Committee
QA	Quality Assurance
RAD	Radiological Operations/Engineering
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site (the Site)
RM	Responsible Manager
S&S	Safeguards & Security
SAR	Safety Analysis Report
SES	Safety Evaluation Screen
Site	Rocky Flats Environmental Technology Site
SM	Shift Manager
SME	Subject Matter Expert
SWP	Standard Work Package
TRU/TRM	Transuranic Waste/Transuranic Mixed Waste
TS&R	Troubleshoot & Repair

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TSR	Technical Safety Requirement
USQD	Unreviewed Safety Question Determination
WBS	Work Breakdown Structure
WCD	Work Control Document
WCF	Work Control Form
WIPP	Waste Isolation Pilot Plant
WP	Work Package
WP&P	Work Plans & Procedures
WSLLC	Wackenhut Services, L.L.C.

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## 1.8 GENERAL RESPONSIBILITIES

General responsibilities with respect to the IWCP are given below. Specific responsibilities are provided in individual chapters.

### 1.8.1 Senior Line Management

Ensure that line managers under their responsibility are trained and require that they use this Manual for all work in their area of responsibility.

Senior line management **SHALL** maintain a list of designated RMs for each facility. The RMs **SHALL** have training in the use of the IWCP and WCD development, and **Should** be familiar with the general principles and practices of project management. This requirement **SHALL** be fully implemented 3 months from the effective date of this Manual.

Conduct oversight activities to ensure IWCP is safely and effectively implemented.

### 1.8.2 Responsible Manager

The RM is the manager directly responsible and accountable for the development, implementation, and performance of the work (e.g., Facility Manager, Building Manager, Operations Manager, Maintenance Manager, and/or Project Manager). The RM **SHALL** be on the facility list of designated RMs.

Use this Manual for planning and performance of all work under their responsibility and ensure the requirements for this Manual are met.

Ensure that support staff and subordinate managers, supervisors and workers implement the results of the screens and safety and compliance controls developed using this Manual.

Ensure that teams, when required, are made up of the properly qualified safety and environmental personnel, craftsmen, engineers and subject matter experts (SMEs).

### 1.8.3 Project Managers, Planners, Engineers and Support Staff

Implement the decisions made, and safety and compliance controls developed, by the use of this Manual in the execution of planning, analysis, procedure writing, work package generation, and development of drawings and specifications.

### 1.8.4 Safety & Program Subject Matter Experts and Floor-Level Workers

Provide input into the work document planning and development process to produce a WCD that implements the elements of ISM and this Manual with an emphasis on safety, while also ensuring workability and efficiency.

### 1.8.5 Environmental Compliance and Stewardship Subject Matter Experts and Floor Level Workers

Provide input into the work document planning and development process to produce a WCD that implements the elements of integrated environmental management and this Manual with an emphasis on compliance and stewardship opportunities, while also ensuring workability and efficiency. Ensure compliance with Federal, State, and DOE requirements in the management of all work.

### 1.8.6 All Employees

Identify and report deficiencies and opportunities for improvement as a routine element of their normal activities.

## 1.9 RECORDS

The following documents are initiated, processed or maintained as a result of this Manual and **SHALL** be processed as follows:

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
<p>Work Documents (consisting of the following documents as specified in the IWCP instructions).</p> <ul style="list-style-type: none"> <li>a) ASF</li> <li>b) Site SAR Screening Form</li> <li>c) WCF</li> <li>d) JHIT</li> <li>e) JHA</li> <li>f) Environmental Checklist and/or Evaluation</li> <li>g) Type 1 WPs</li> <li>h) Type 2 WPs</li> <li>i) Technical Procedures, Technical Operations Orders, Performance Test and Exercise Plans and other Chapter 6 work control documents</li> <li>j) Preventive Maintenance WPs</li> <li>k) Emergency Work Packages</li> <li>l) Minor Maintenance Documentation</li> <li>m) Procurement Specifications (non design)</li> <li>n) Inspection Requirements</li> </ul>	<p><b><i>In-Process WIPP/LL/LLM QQA Documents:</i></b> When document(s) is being generated by the Transuranic (TRU) and LL programs, not yet complete (authenticated).</p> <p><b><i>In-Process QA Document(s):</i></b> Document(s) is being generated and is not yet applicable to the TRU/LL programs.</p> <p><b><i>WIPP/LL/LLM QA Record:</i></b> As per 1-V41-RM-001, Appendix 10; if the document(s) is related to the WIPP Project and it is complete (authenticated).</p>	<p><b><i>In-Process WIPP/LL/LLM QA Documents:</i></b> While being generated, the RM <b>SHALL</b> implement a reasonable level of protection to prevent loss and/or degradation. Document(s) <b>SHALL</b> be processed using standard office filing equipment and methods when not in use.</p> <p><b><i>In-Process QA Document(s):</i></b> While being generated, the RM <b>SHALL</b> implement a reasonable level of protection to prevent loss and/or degradation. Document(s) <b>SHALL</b> be processed using standard office filing equipment and methods when not in use.</p> <p><b><i>WIPP/LL/LLM QA Record:</i></b> <b>SHALL</b> be transmitted to the Waste Records Center, within one (1) working day of completion. During this period, RMs <b>SHALL</b> continue to implement a reasonable level of protection to prevent loss and/or degradation. Document(s) <b>SHALL</b> be stored in standard office filing equipment.</p>	<p><b><i>In-Process WIPP/LL/LLM QA Documents:</i></b> Continue prescribed processing of document(s). RMs <b>SHALL</b> implement a reasonable level of protection to prevent loss and/or degradation. Document(s) <b>SHALL</b> be stored in standard office filing cabinets until complete.</p> <p><b><i>In-Process QA Document(s):</i></b> Continue prescribed processing of document(s). RMs <b>SHALL</b> implement a reasonable level of protection to prevent loss and/or degradation. Document(s) <b>SHALL</b> be stored in standard office filing cabinets until complete.</p> <p><b><i>WIPP/LL/LLM QA Record:</i></b> Transmit document(s) to the Waste Records Center, per 1-PRO-077-WIPP-005.</p>
	<p><b><i>QA Record:</i></b> Record that is considered complete (authenticated), as per 1-V41-RM-001, Appendix 10.</p>	<p><b><i>QA Record:</i></b> RMs <b>SHALL</b> implement a reasonable level of protection to prevent loss and/or degradation. Document(s) <b>SHALL</b> be stored in standard office filing equipment.</p>	<p><b><i>QA Record:</i></b> When inactive (as defined in 1-V41-RM-001), transfer to Site Records Management in accordance with 1-V41-RM-001.</p>



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## APPENDIX 1.1 - FLOW CHARTS AND OVERVIEW

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### INTEGRATED WORK CONTROL PROGRAM (IWCP) OVERVIEW

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**THIS OVERVIEW IS DESIGNED TO BE A GUIDE THROUGH THE IWCP PROCESS AND REMIND USERS OF KEY POINTS. THE USER MUST REFER TO THE FOLLOWING CHAPTERS TO PLAN WORK AND DEVELOP WORK CONTROL DOCUMENTS!**

The DOE Integrated Safety Management (ISM) system is an integrated approach to environment, safety, and health to ensure that work is planned, analyzed, reviewed, approved, and executed in a safe manner and that the process is continuously improved. The Rocky Flats Integrated Work Control Program (IWCP) Manual contains the ISM core function guidance necessary to: Define the Scope of Work; Identify and Analyze the Hazards; Identify and Implement Controls; Perform the Work Safely; and Provide Feedback through out the process. The IWCP Manual also contains appropriate reference to other Site infrastructure programs to ensure work is planned and conducted in accordance with the requirements of those programs. This overview provides a quick discussion regarding the key elements of IWCP. Additional IWCP training may be obtained via the KH Training department and includes the following courses: IWCP Work Package Development; IWCP/JHA Workshop; Job Hazards Analysis (JHA) CBT and the IWCP Overview self study web page.

- ⇒ IWCP applies to ALL Site employees and subcontractors performing or supporting onsite work.
- ⇒ No work performed at the Site is exempt from the requirements of the IWCP without first being screened.
- ⇒ Any exceptions to the requirements of the IWCP must be granted in writing by the IWCP Program Manager.
- ⇒ The Responsible Manager is directly responsible and accountable for the development, implementation, and performance of the work (e.g., Facility Manager, Building Manager, Operations Manager, Maintenance Manager, Responsible Engineering Manager, and/or Project Manager).

#### **DEFINITIONS:**

- “SHALL”** - Mandatory element and requirement.
- “Should”** - A recommendation that is based on standards and good business practices.
- “may”** - Permission is granted rather than constituted as a recommendation or requirement.
- “work”** - Any physical project or effort that has the potential to produce damage to the environment, injury to the public or worker in the event of an accident or process upset

#### **IWCP/ISM PROCESS OVERVIEW: - IWCP and ISM work hand-in-hand**

- In general, Chapters 1-3 of the IWCP Manual apply to all work activities. These contain information regarding scope definition, hazard identification, hazard controls and include the WCF, ASF and JHIT/JHA.
- The ASF is completed by the RM and determines the planning level for the activity and the composition of the planning team.
- Then the Job Hazard Identification Tool (JHIT) and Job Hazard Analysis (JHA) are developed by the planning team to identify hazards and controls.
- After the planning level and work control document (WCD) type are determined, go to the applicable chapter for development of the WCD. Review Lessons Learned for applicable lessons prior to WCD development.
- For more detail refer to Appendix 1.1, “Flow Charts,” as well as the IWCP instructions for the overall Site work processes .
- For emergency work go immediately to Chapter 9.
- Chapter 1 contains definitions and acronyms.

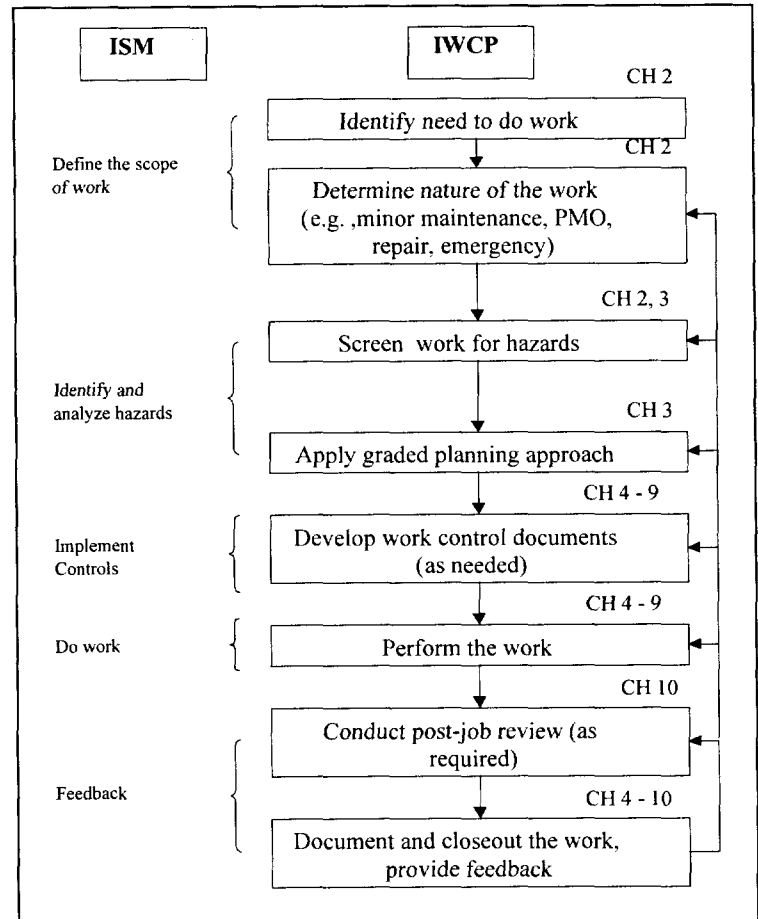
## APPENDIX 1.1 – FLOW CHARTS & OVERVIEW

### WORK INITIATION/ACTIVITY SCREENING FORM:

If the work involves maintenance, initiate a WCF; otherwise, generate an ASF. A WCF acts like a traveler attached to a WCD, summarizing data, determinations, choices and status. The form is filled out sequentially from origination through closure, ensuring the IWCP is followed. For non-maintenance activities the ASF evaluates the activity to determine if: 1) adequate control/documentation is in place to perform the work, and/or 2) the required expertise and planning level is in place to adequately plan the work in a safe and compliant manner based on potential hazards and programmatic requirements. [Chapter 2]

The ASF **SHALL** be performed for the following:

- For new projects and activities
- Whenever the hazards, processes, equipment, or controls have changed since the last time it was performed, or for which the WCDs require development or revision (includes procedures, work packages, preventive maintenance packages, service contracts, etc.)
- Prior to commencing work



### CLASSIFYING THE SCORING RESULTS OF AN ASF:

**Low planning level approach (15 points or less)** – activity hazards and complexity are low and the work is either routine or simple and there is some experience at performing most, if not all, of the work. Examples could include maintenance and replacement of equipment.

**Medium planning level approach (16-40 points)** – usually applied when there are some significant hazards associated with the work or some uncertainty exists about the hazards. The activity is somewhat complex, or the activity has not been performed by the associated project team at the Site. Planning team will consist of a planner and all the SMEs identified in the ASF. Examples could include most D&D work and environmental restoration.

**High planning level approach (41 points or greater)** – usually applied when there are significant hazards associated with the activity (or significant uncertainty exists about the hazards), and there is significant activity complexity or the activity has not been performed by the associated project team at the Site. Planning team will consist of a planner and all the SMEs identified in the ASF. An example could be installation of the PuSPS.

### HAZARD IDENTIFICATION AND CONTROL:

The JHIT helps the planners and workers focus on the hazards associated with performing the work activity. The planning team identifies the potential hazards as part of a job walkdown, establishes the required controls to prevent/mitigate the hazards, documents the hazards and controls on the JHA, and incorporates the controls in the WCD. The JHA Guide assists the team in determining controls, requirements, and training. Performing a JHA is a repetitive process and **Should** be re-visited and updated as needed during the planning phase and/or execution phase if new hazards are discovered, or if the scope or safety and compliance controls change. [Chapter 3]

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## APPENDIX 1.1 – FLOW CHARTS & OVERVIEW

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### WORK CONTROL DOCUMENTS

Type 1 WP	Provides the criteria/instructions for conducting work including format and approval requirements, conduct of work, change control, and close-out. Type 1 is generally used for maintenance activities where engineering design is not required. Engineering calculations and input may be used and documented in a Type 1 WP. [Chapter 4]
Type 2 WP	Provides the criteria/instructions for conducting activities where engineering design support is necessary. This process coordinates the actions of the design engineer with the planner and follows the same format and requirements as a Type 1 WP. [Chapter 4]
Standard WP	Provides the criteria/instructions for conducting work that is repetitive in nature. [Chapter 5]
Work Plans Procedures	Provides the criteria and instructions for conducting work using Work Plans and & Procedures (such as: Technical Procedures, Technical Operations Orders, etc.) including formatting and approval requirements, conduct of work, change control, and closeout. Provides a table to help determine additional governing documents required for development of the WP&Ps. [Chapter 6]
Preventive Maintenance WP	Provides the criteria and instructions for the development and control of Preventive Maintenance activities including formatting and approval requirements, conduct of work, change control, and closeout. [Chapter 7]
Minor Maintenance	Provides the criteria and instructions for conducting minor maintenance activities. Includes a pre-approved JHA matrix to allow for implementation of ISM while conducting work with minimal paperwork. [Chapter 8]
Emergencies	Provides, along with the Conduct of Operations Program (COOP), the criteria and instructions for performing and documenting emergency work, which is work that requires immediate action to prevent serious personal injury, harm to the environment, a breach to security, or a serious loss of property. Emergency work is the only work activity which bypasses the ASF. [Chapter 9]

### EXEMPTIONS

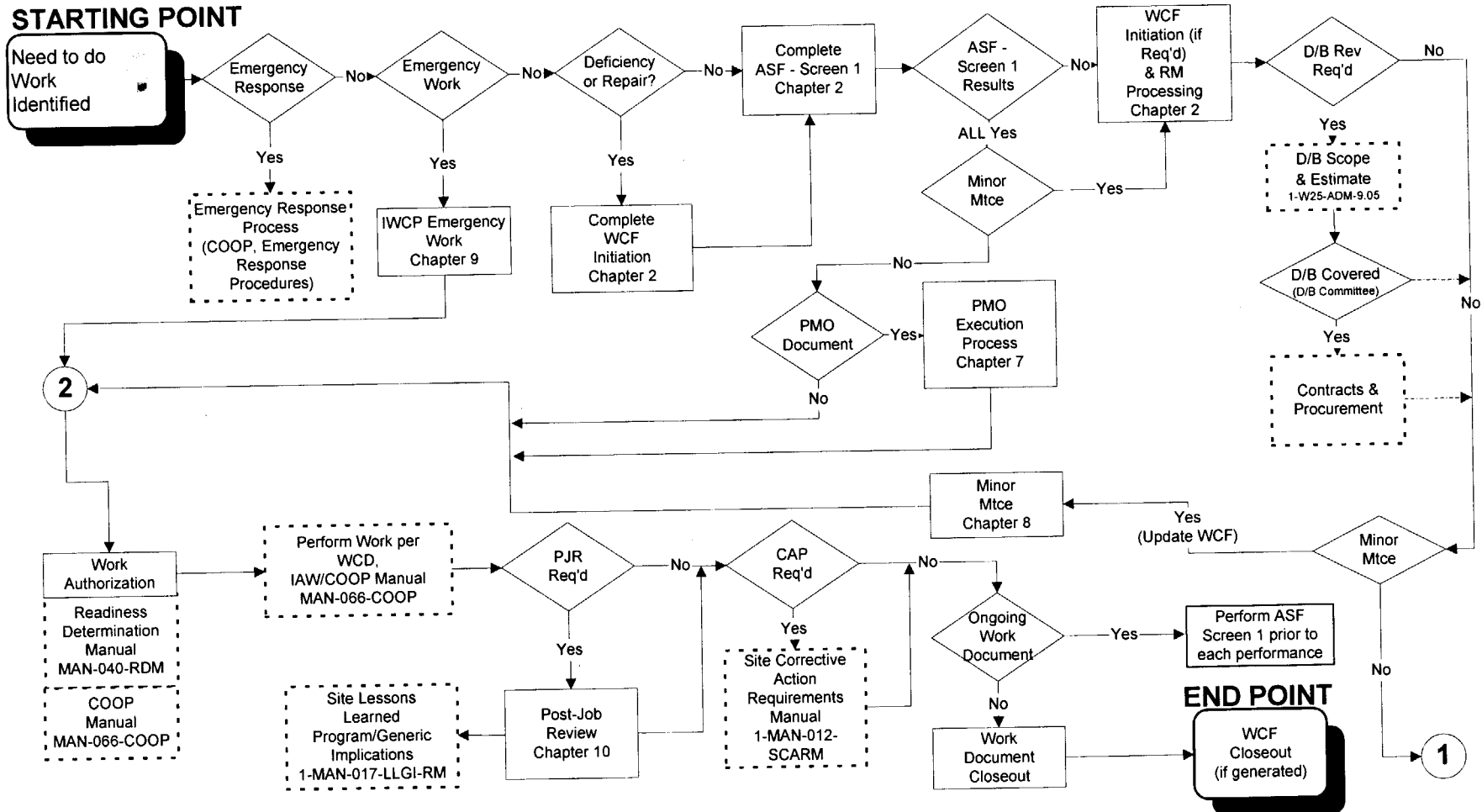
The following routine activities are prescreened and are exempted from the IWCP Manual documentation requirements. This does **NOT** mean exemption from ISM principles/Site infrastructure requirements. [Chapter 2]

- Routine operation, repair, and servicing of vehicles including automobiles, trucks, graders, forklifts, fire trucks, etc. Critical lifts and load testing are not included.
- Routine operation, repair, and servicing of office equipment including computers, drives, scanners, fax machines, copiers, telephones, electric punching/cutting and stapling equipment, typewriters, office furniture, date/time stamps, postage meters, shredders, blueprint machines, printers, etc.
- Routine operation, repair, and servicing of laboratory equipment including audiometers, medical equipment (excluding x-ray devices), sterilizers, microscopes (excluding electron microscopes), etc.
- Routine operation, repair, and servicing of miscellaneous equipment including security booths, heavy mobile equipment, video badging, binoculars, and exercise equipment.
- Routine support services including cafeteria services; lawn care and grounds maintenance excluding activities resulting in soil disturbances; snow removal; warehouse pickup, delivery, storage/stocking; commodity vendor services; and janitorial services.
- Routine administrative and clerical services, including filing, typing, writing, etc.
- Routine performance of inspections, surveillances, or assessments as long as work as defined in this Manual is not performed.

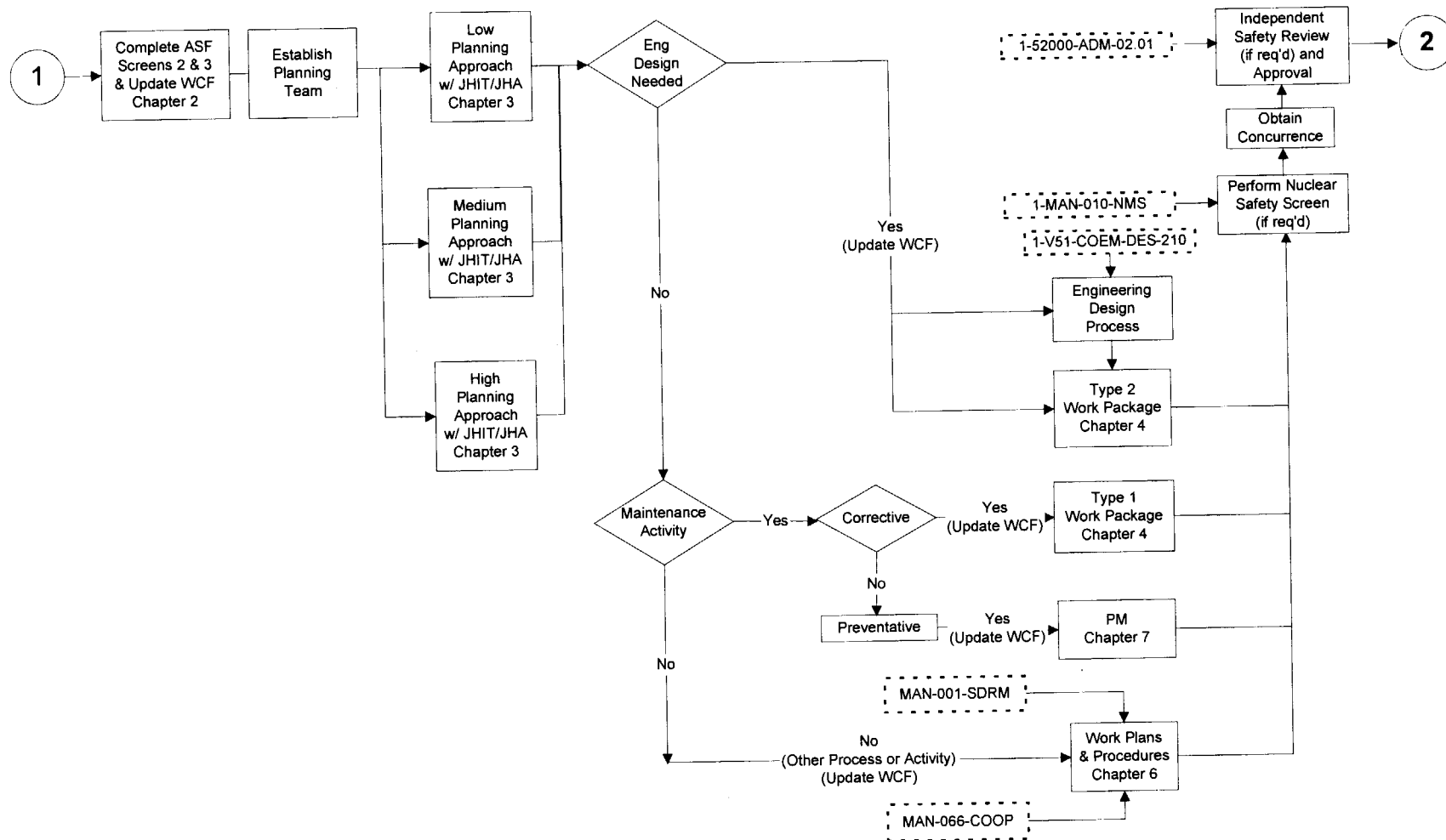
A routine activity is considered a low hazard activity that is not complex and is conducted with sufficient frequency that activity performance and safety and compliance controls are well known and understood.

## APPENDIX 1.1 – FLOW CHARTS & OVERVIEW

### STARTING POINT



## APPENDIX 1.1 – FLOW CHARTS & OVERVIEW



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## APPENDIX 1.2 - REQUIREMENTS

This appendix lists the external standards and requirements which drive the IWCP. Each requirement is identified and the method of compliance is described.

### **General Requirements Applied to All Work**

The *Site Quality Assurance Manual*; 10 CFR 830.120, *Quality Assurance Requirements*; and DOE Order 414.1A, *Quality Assurance* are the quality assurance regulatory documents that apply to all activities at the Site. The requirements that apply to work are specified with the other documents below.

### **Training and Qualification**

The training that is necessary to qualify workers for their assigned tasks is determined via the IWCP planning process. Training provides an important administrative control to job hazards, which are identified during the hazard analysis portion of the planning process. The training **SHALL** emphasize the purpose and use of the safety controls defined in the IWCP for the work.

#### **Requirement**

- DOE Order 4330.4B, Chapter 2, Element 3, "Training and Qualification of Maintenance Personnel", 3.1, Introduction. A maintenance training and qualification program consistent with references in Paragraphs 5g and m should be implemented to develop and maintain the knowledge and skills needed by maintenance personnel to effectively perform maintenance activities. The program should be designed so that the maximum potential of maintenance personnel is fulfilled.
- 10 CFR 830.120 (c)(ii) for Nuclear Facilities/Activities, Personnel shall be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained.
- DOE Order 414.1A, 4. b. (1). (b) Criterion 2-Personnel Training and Qualification; 1 Personnel must be trained and qualified to ensure they are capable of performing their assigned work and 2 Personnel must be provided continuing training to ensure that job proficiency is maintained.
- DOE Order 5480.20A, Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities.

#### **Implementation**

Individual companies are responsible for determining qualifications of staff that plan and perform work using IWCP.

### **Maintenance**

This Manual implements selected Maintenance Program requirements from DOE Order 4330.4B. Remaining DOE Order 4330.4B requirements are implemented through other documents. Each of the requirements implemented by this Manual is critical to the overall objective of ensuring the safe and reliable operation of facilities as well as supporting the Site mission for remediation, D&D and demolition. For simplicity, only the citations from Chapter 2 are discussed below.

### **Types of Maintenance**

#### **Requirement**

- DOE Order 4330.4B, Chapter 2, Element 5, "Types of Maintenance", 5.1, Introduction. A proper balance of corrective and preventive maintenance should be employed to provide a high degree of confidence that facility equipment degradation is identified and corrected, that equipment life is optimized, and that the maintenance program is cost effective. The maintenance program includes preventive, predictive, and corrective maintenance.

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## APPENDIX 1.2 - REQUIREMENTS

### Implementation

Corrective maintenance is implemented by this Manual. Preventive maintenance identification and programmatic implementation is performed through the "Preventive Maintenance Program Plan." Kaiser-Hill and subcontractor responsibilities are identified in this document which includes equipment selection, maintenance action and frequency selection, and database control. The PMWP development and Preventive Maintenance Order work performance are implemented in Chapter 7 of this Manual. Predictive maintenance is not included because of the Site mission and graded approach implementation.

### **Maintenance Procedures**

#### Requirement

- *DOE Order 4330.4B, Chapter 2, Element 6, and "Maintenance Procedures", 6.1, Introduction. Maintenance procedures and other work-related documents (e.g., drawings and instructions) should be prepared and used to provide appropriate work direction and to ensure that maintenance is performed safely and efficiently. One of the key elements needed to consistently perform maintenance in a safe and efficient manner is the proper use of written procedures. A balanced combination of written guidance, crafts, skills, and workmanship is essential to safe and reliable facility operation.*

### Implementation

Maintenance procedure development and revision is implemented by Chapter 8 of this Manual and the Document Management Requirements Manual. The procedures are worked through other Chapters in this Manual, either through the WP Processes or directly through the WCF Process.

### **Planning of Maintenance**

#### Requirement

- *DOE Order 4330.4B, Chapter 2, Element 7, "Planning, Scheduling, and Coordination of Maintenance", 7.1 Introduction (Paragraph 1). An effective system for planning, scheduling, and coordinating maintenance activities should be implemented in order to: ensure that maintenance is accomplished in a timely manner; improve maintenance efficiency; reduce radiation exposure (ALARA); and increase equipment availability. Planning and scheduling involve assigning priorities that reflect the importance of maintenance work relative to safe and reliable facility operation; identifying logistics, personnel support, and other preparation; and minimizing any adverse impact that the maintenance has on facility operation. Coordination of work ensures that needed support (e.g., clearance tagouts, radiation work permits, quality control) is available (References in Paragraphs 5f, e, and m apply).*

### Implementation

Planning is implemented through the three levels of planning defined through the ASF and also through the individual WP processes. Scheduling and coordination of maintenance is implemented through other Site documents.

### **Control of Maintenance Activities**

#### Requirement

- *DOE Order 4330.4B, Chapter 2, Element 8, "Control of Maintenance Activities", Introduction. Management involvement in control of maintenance activities should ensure that maintenance practices are effective in maintaining safe and reliable facility operation. This control should extend to all facility, other contractor, and subcontractor personnel involved in maintenance activities. Rigorous control of maintenance activities should be directed toward achieving high-quality work performance, personnel safety (including radiological protection), equipment and system protection, and facility safety and reliability.*

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## APPENDIX 1.2 - REQUIREMENTS

- *The work control program should be based on administrative procedures that address identification of needed work, planning and preparation for work, establishment of conditions to perform work, conduct of work activities, documentation of completed work, post-maintenance acceptance of work, return-to-service procedures, review of completed work records, control of temporary repairs, and controls placed on non-facility contractor and subcontractor personnel working in the facility. The program should also make provision for collecting and storing equipment maintenance data (P. 16).*
- *This Paragraph describes the attributes of an effective program for controlling activity maintenance activities. References in Paragraphs 5e, f, l, and m apply.*
- *CFR 830.120 (c)(2) (i) for Nuclear Facilities and Activities, Work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained.*
- *DOE Order 414.1A, 4. b. (2). (a) Criterion 5-Work Processes: 1 Work must be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. 2 Items must be identified and controlled to ensure their proper use. 3 Items must be maintained to prevent their damage, loss, or deterioration. 4 Equipment used for process monitoring or data collection must be calibrated and maintained.*

### Implementation

This Manual implements the above requirements.

### **Post Maintenance Testing Requirement**

- *DOE Order 4330.4B, Chapter 2, Element 9, "Post-Maintenance Testing", 9.1 Introduction. Post-maintenance testing should be performed to verify that components will fulfill their design function when returned to service after maintenance. Post-maintenance testing includes all testing performed after maintenance activities. An effective post-maintenance testing program should apply to all maintenance activities and address each organization's responsibilities, equipment to be included, degree and type of testing, procedure needs, acceptance requirements, testing control, and results documentation. Post-maintenance testing could be as simple as checking manual valve for leaks at normal operating pressure after packing adjustment or as detailed as an in-depth diesel generator performance test. This Paragraph describes a program for specifying, performing, documenting and accepting post-maintenance testing. References in Paragraphs 5f and m apply.*

### Implementation

The WP processes in this Manual and the Site Engineering Requirements Manual implement this requirement.

### **Modification Work Requirement**

- *DOE Order 4330.4B, Chapter 2, Element 18, and "Modification Work", Introduction. Facility modification work, including temporary modifications, should be accomplished under the same basic administrative controls as those applied to facility maintenance activities so that there are no increases in risk to facility, equipment, environment, or personnel because of the modification work. This Paragraph describes the required updating to the maintenance program as result of facility modifications and the handling of temporary modifications.*
- *DOE Order 5480.19, Conduct of Operations, also has requirements to control temporary modifications.*



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## APPENDIX 1.2 - REQUIREMENTS

### Implementation

This Manual, the *Conduct of Operations* (COOP) Manual, and the Site Engineering Requirements Manual implement both temporary and permanent modifications. The Site Engineering Requirements Manual provides the engineering design requirements. The COOP Manual controls and tracks temporary modifications. This Manual provides the processes to document, plan, and perform the actual work.

### Site Closure Work

Site Closure work to maintain compliance with Environmental Protection Agency, Colorado Department of Public Health and Environment, and National Environmental Policy Act regulations. The Environmental Systems & Stewardship programs provide the specific requirements and limits in accordance with the Rocky Flats Cleanup Agreement (RFCA). This Manual provides the actual work document to implement the actions necessary to perform compliant work.

### Operating Procedures

#### Requirement

- DOE Order 5480.19, "Conduct of Operations Requirements for DOE Facilities," Guidelines, Chapter XVI, "Operations Procedures", Introduction. *Operating procedures are written to provide specific direction for operating systems and equipment during normal and postulated abnormal and emergency conditions. Operations procedures should provide appropriate direction to ensure that the facility is operated within its design bases and should be effectively used to support safe operation of the facility. Other methods of disseminating operational information are addressed in Chapter XI, Operating Orders*

### Implementation

Equipment/system operating procedures and AB/SAR surveillance procedures are developed, revised, and implemented through safety and compliance controls of this Manual and the Document Management Requirements Manual. Emergency procedures are under the control of the Site Emergency Preparedness Program.

### Nuclear Safety

#### Requirement

- DOE C 420.1, Contractors Requirement Document for "Facility Safety", Section 4.1, "Nuclear and Explosive Safety Design Criteria", *The contractor is, for nuclear safety, required to ensure that Department of Energy (DOE) nuclear facilities are designed and constructed so as to assure adequate protection for the public, workers, and the environment by application of the requirements contained herein. These requirements apply to the activities of design and construction of new DOE nuclear facilities and of modifications to existing DOE Hazard Category 1, 2, and 3 non-reactor nuclear facilities when the proposed modifications significantly degrades the approved safety basis for the facility. Modifications to facility design and construction during the design and construction phase shall conform to the requirements for new facilities. Activities associated with facility deactivation at end of life are exempt if justified by safety analysis.*

### Implementation

This Manual, the *Nuclear Safety Manual* and the Site Engineering Requirements Manual control both design and work implementing documents. This Manual provides the processes to document, plan, and perform the actual physical work. The Nuclear Safety Manual delineates the controls to ensure that nuclear activities are conducted safely. The Site Engineering Requirements Manual provides the engineering design required.

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## APPENDIX 1.2 - REQUIREMENTS

### **Documents and Records**

#### **Requirement**

- *10 CFR 830.120 (c)(1)(iv) for Nuclear Facilities/Activities, Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Records shall be specified, prepared, reviewed, approved, and maintained.*
- *DOE Order 414.1A, 4. b. (1). (d) Criterion 4-Documents and Records, 1 Documents must be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. 2 Records must be specified, prepared, reviewed, approved, and maintained.*

#### **Implementation**

This Manual references the safety and compliance controls necessary to ensure that required documentation is generated and maintained.

### **Integrated Safety Management**

#### **Requirement**

- *DOE P 450.4, Safety Management System Policy describes the five functions and seven principles of ISM and how they are to be applied at DOE sites.*

#### **Implementation**

This Manual implements the Site's ISM system by ensuring the five functions of ISM are implemented at the activity level as described in Section 1.4.

### **Integrated Environmental Management**

#### **Requirement**

- *DOE 5400.5, "Radiation Protection of the Public and the Environment," Programs shall be established to provide for adequate monitoring to ensure protection of the public and the environment against undue risk from radiation.*
- *40 CFR, "Protection of the Public," Regulations promulgated for the protection of the public and environment by coordinating permits and governmental action to assure those protections by abating and controlling pollution (e.g., RCRA).*
- *K-H Senior Management Policy (Environmental Policy), Policy states that K-H is committed to protecting, and enhancing the environment by complying with all governing laws, permits and compliance agreements.*
- *Integrated Environmental Management Manual, Provides overview of compliance and stewardship programs in place to ensure protection of employees, public and the environment.*

#### **Implementation**

The Integrated Environmental Management Manual outlines the K-H Team's Environmental Stewardship Program, Integrated Environmental Management and regulatory requirements. Included in this manual are:

- K-H Environmental Policy
- Integrated Environmental Management Program and environmental pledges
- Environmental Compliance Plan
- Environmental Management Systems
- Program plans and regulatory/site requirements for the 12 environmental media

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## APPENDIX 1.3 - TRAINING GUIDELINES

As part of the work planning process, safety and compliance controls are developed and implemented to prevent or mitigate hazards. Training is one form of work control that must be considered and requirements determined during the work planning process. Training falls into one of two categories: regulatory required training and job specific training. There are several ways that employees doing work at the Site acquire the necessary training. The RM is responsible for ensuring that personnel who engage in any job effort have the required training prior to the onset of that job. There are tools available to help the RM ensure that these training requirements have been identified and met. This Appendix identifies the drivers for training on Site, defines the two types of training, identifies the various training mechanisms commonly used at the Site, and describes the tools available to manage personnel training compliance.

### **Training Roles and Responsibilities**

#### **Project Planners/Planning Team:**

- Identify all relevant training (regulatory required and job-specific training) for the project being planned, including training needs based on hazard assessment activity analyses and identified safety controls (e.g., JHA/IHA).

#### **Managers/Supervisors:**

- Ensure that training requirements for required training and job-specific training are identified
- Ensure applicability of training programs
- Periodically assess worker training status
- Schedule workers for training to ensure they remain current
- Review and approve requests for Exceptions from Training
- Ensure that employees attend scheduled training
- Track status of worker training and qualification
- Ensure facility and activity-specific instruction covers the purpose and use of identified safety controls

#### **Contract Technical Representative:**

- Identifies subcontractor training requirements based upon activities and areas to be accessed—consult appropriate project and program managers and K-H Training Oversight and Integration for assistance
- Requires workers to be trained prior to work
- Reviews/concurs with exceptions from training for subcontractor employees
- Ensures facility-specific instruction is sufficient for safe and correct job performance by subcontractor employees
- Knows status of subcontractor training

#### **Building/Operations Management:**

- Ensures personnel assigned to their facility meet training requirements
- Ensures identified personnel are qualified for their job assignments
- Ensures visitors meet facility entry requirements

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## APPENDIX 1.3 – TRAINING GUIDELINES

### K-H Training Oversight and Integration Integrators:

- Work with projects/companies to assist in interpreting training requirements to meet specific job needs.

### Site Documents that Govern Training Practices

The document governing training and qualification practices at the Site is the *Training Users Manual*. Kaiser-Hill has a training procedure that describes specific training practices for K-H. Each contractor should have its own training program plan and supporting procedures that are based on the requirements set forth in the Training Users Manual and concurred with by K-H Training Oversight & Integration. Specific training practices that are not documented by the principal subcontractors default to the Training Users Manual and the K-H training procedure for guidance.

The Training Users Manual sets standards and requirements for all training programs at the Site. It is the definitive source on the training and qualification process at the Site for training requirements, records requirements, exceptions from training, training audience descriptions, course duration, delivery mechanisms, and refresher timing. This is accessible from the Site Intranet.

### Types of Training

There are two broad categories of training at the Site. The first is regulatory required training. This type of training includes topics such as radiological training, waste handling and management, nuclear criticality safety, security, and various Occupational Safety & Health Administration (OSHA) driven courses. Regulatory required training content is determined by individual program owners who work with training experts to create curriculum consistent with the federal, state, and site specific driver documents for each program (e.g., Radiological Control Manual, Health and Safety Plan, OSHA, Resource Conservation and Recovery Act (RCRA) permit).

The second type of training is called job-specific training. This includes use of equipment and work processes. For more routine jobs, skill-of-the-craft may cover the need for training, but for more complicated, non-routine work there may be a need for on-the-job training to prevent or mitigate potential hazards associated with doing work with unfamiliar equipment and ensure workers understand the safety controls. Guidance for how to assess on-the-job-training needs, as well as how to implement an on-the-job-training program can be found in the Training Users Manual.

For all work, it must be possible to demonstrate that workers are qualified/competent to perform the assigned work (i.e., skills and knowledge). This includes both regulatory required training and job-specific training. In nuclear buildings, DOE Order 5480.20A mandates that each facility **SHALL** have a written summary of positions requiring certification and qualification requirements. This information appears in the current approved *Training Implementation Matrix*. For any non-routine work, even if it is not in a nuclear facility, it is a good practice to create a training matrix by position for that project (a current example of this may be found in Training Implementation Plans). Implementation of competency requirements **SHALL** use a graded approach consistent with the hazards and risks associated with the work, the mission and characteristics of the facility, and any other relevant factors. Further details on competency requirements can be found in the Training Users Manual.

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## APPENDIX 1.3 – TRAINING GUIDELINES

### Training Mechanisms

Training takes place at the Site through a variety of media and platforms. This includes classroom, Computer Based Training, and Interactive Videodisc training which are scheduled and delivered through the K-H Training Oversight & Integration group. Web-based training, which will be increasingly available, is accessible via any desktop computer that is connected to the network. The on-the-job-training, including demonstrations and mock-ups, toolbox meetings, pre-evolution briefings, and continuous training programs are all administered at the company/project level.

### Training Management Tools

Site training that fulfills regulatory requirements is described in Table 1 of the Training Users Manual. Table 1 provides details about training for area access and ES&H courses applicable to broad audiences. Table 1 does NOT include most job-specific or activity-specific training; these are defined and managed by projects; nor does it include most qualification or certification programs; these are defined and managed by companies. It also does not include training on computer software or personal or professional development topics, as these are defined and managed by individual companies.

The Training Decision Assistant is an interactive tool designed to help users determine their regulatory required training needs by answering questions about the nature of their job. It is available on the Training server that can be accessed via the Site intranet.

The Training Scheduling Records Management Tool is a program that allows users to find out:

- Employee training histories
- Whether employees are current in their required training
- Which employees are current for a given set of training
- Who is currently scheduled for training

The Training Scheduling Records Management Tool allows for more sophisticated management of employee training issues, including on-line scheduling of courses. Both of these programs are available on the Site client/server. Access from one's desktop computer is granted to qualifying individuals by contacting the K-H Training Oversight & Integration group. The Training Scheduling Records Management Tool enables users to create unique training lists that define work qualification. All prospective employees to be assigned to perform work governed by this Manual can be evaluated by the on-line Training Scheduling Records Management Tool to determine if their training history matches the list of training required to be qualified for the work.

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## CHAPTER 2 - WORK INITIATION & SCREENING

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### 2.1 PURPOSE

This chapter provides the mechanism for requesting or initiating work via a WCF.

This chapter also provides requirements, instructions, and criteria to screen projects/activities by:

- Characterizing an activity
- Profiling the hazards associated with an activity including regulatory drivers/requirements
- Selecting the appropriate work planning process for integrating the appropriate safety management infrastructure programs
- Identifying other required infrastructure programs associated with the planning and execution of an activity
- Identifying additional documentation and checklists required

### 2.2 SCOPE

The identification of a need to perform work and the initiation and evaluation of the WCF are described. This chapter also describes the required planning elements for conducting the three levels of work planning which are graded to the complexity of the work, the hazards encountered in performing the work, the uncertainty about the work, and the hazards it entails. The level of work planning required is determined by the results of the ASF. The ASF results are expected to be available for use before planning begins. The three levels of planning are:

- **Low planning level approach** – activity hazards and complexity are low, there is no potential environmental impact and the work is either routine or simple and there is some experience at performing most, if not all, of the work.
- **Medium planning level approach** – usually applied when there are some significant hazards and/or potential for negative environmental impact associated with the work or some uncertainty exists about the hazards. The activity is somewhat complex, or the activity has not been performed by the associated project team at the Site.
- **High planning level approach** – usually applied when there are significant hazards and/or environmental impact associated with the activity (or significant uncertainty exists about the hazards), and there is significant activity complexity or the activity has not been performed by the associated project team at the Site.

### 2.3 APPLICABILITY

All work, except emergency work, is screened via this Manual. If the work involves corrective maintenance, then a WCF is initiated first. Otherwise, the ASF is generated directly.

The ASF **SHALL** be applied to the following:

- New projects/activities, including research and development
- Any work activity for which the hazards, processes, equipment, or safety and compliance controls have changed since the last time it was performed, or for which the work control/planning documents require development/revision (includes the creation of new or revised procedures, WPs, etc.)
- Prior to commencing work

Any new subcontracted services or procurements or modifications/changes to existing services or procurements **SHALL** be performed per APR-111.

No work performed at the Site is exempt from the requirements of this Manual without first being screened. The ASF will identify any activities for which adequate safety and compliance controls currently exist for performing work safely and compliantly, and no additional planning effort is required. To assist the RM in using the ASF and clarifying those activities for which adequate safety and compliance controls currently exist, the following bulleted items have been pre-screened and **may** be conducted using good technical judgment by those performing the work. Any pre-screened activity **may** be performed within the requirements of the IWCP, if deemed appropriate by the job supervisor.

To ensure safe and compliant work performance, RMs **Should** consider screening some of the projects/activities listed below that potentially have higher degrees of hazards/impact on the environment, complexity, uncertainty; or that are not routinely performed. In addition, RMs **Should** pay particular attention to discovery of new hazards, regulatory requirements, or other areas that can change the scope of work or safety and compliance control set. Discovery of uncharacterized hazards is typically indicative of high uncertainty in the hazard profile and could affect a facility's AB.

The following routine operations, repair, and servicing activities are prescreened and exempted from the IWCP Manual documentation requirements (it should be noted that exemption from IWCP does not mean exemption from ISM and other Site infrastructure requirements). Persons conducting work on these activities **SHALL** continue to follow the functions and principles of ISM including identifying the hazards, regulatory requirements and establishing the proper safety and compliance controls to perform the work safely:

- Routine operation, repair, and servicing of vehicles including automobiles, trucks, graders, forklifts, fire trucks, etc. Routine repair and servicing includes fueling, vehicle tire changes, engine/body repair, battery testing, alignment, fluid replacement, windshield replacement, etc. Critical lifts and load testing are not included. All generated wastes must be compliantly managed.
- Routine operation, repair, and servicing of office equipment including computers, drives, scanners, fax machines, copiers, telephones, electric punching/cutting and stapling equipment, typewriters, office furniture, date/time stamps, postage meters, shredders, blueprint machines, printers, etc. Any hazardous waste generated must be compliantly managed.
- Routine operation, repair, and servicing of laboratory equipment including audiometers, medical equipment (excluding x-ray devices), sterilizers, microscopes (excluding electron microscopes), etc.
- Routine operation, repair, and servicing of miscellaneous equipment including security booths, heavy mobile equipment, video badging, binoculars, and exercise equipment.
- Routine support services including cafeteria services; lawn care and grounds maintenance (e.g., mowing grass, tree trimming) excluding activities resulting in soil disturbances; snow removal; warehouse pickup, delivery, storage/stocking; commodity vendor services (e.g., paper/office suppliers, refilling vending machines); and janitorial services. If workers encounter rodent nests or droppings at any point during the work process, they should stop work and contact Safety and Health for guidance because of the potential Hantavirus danger.
- Routine administrative and clerical services, including filing, typing, writing, etc.
- Routine performance of inspections, surveillances, or assessments as long as work as defined in this Manual is not performed (i.e., opening containers, moving equipment/material)

A routine activity is considered to be a low hazard activity that is not complex and is conducted with sufficient frequency that activity performance and safety and compliance controls are well known and understood.

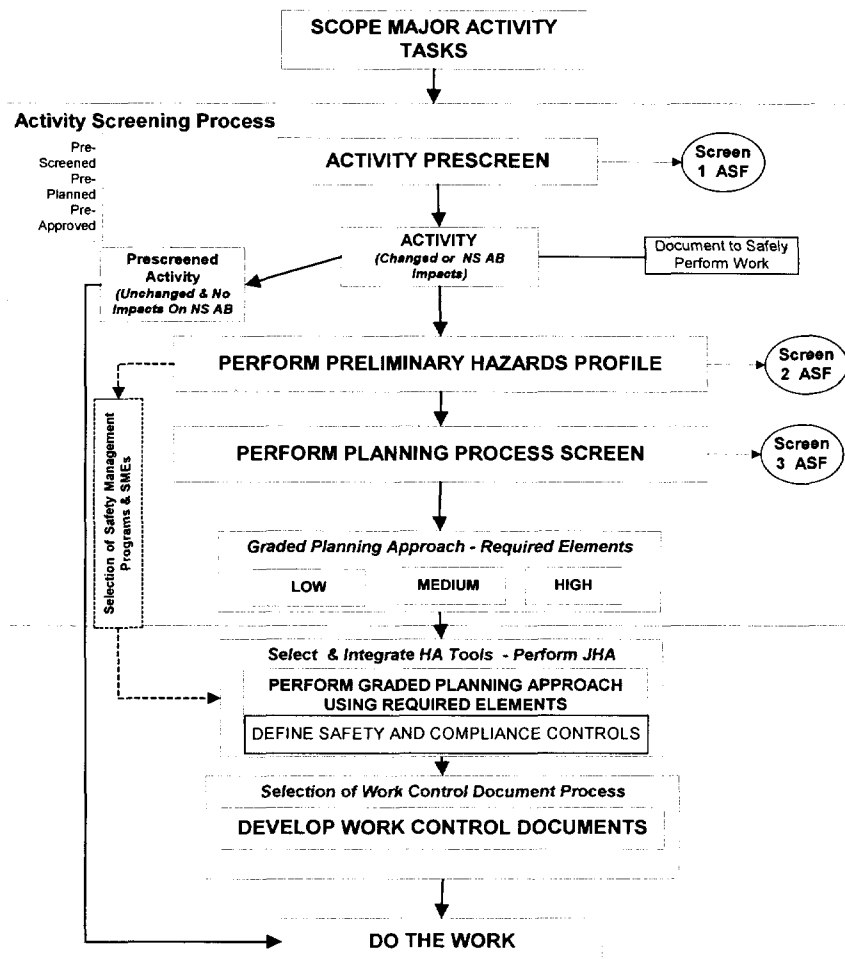
## 2.4 OVERVIEW

The generation of a WCF (Appendix 2.1) and an ASF (Appendix 2.2) facilitates the decision-making processes which are essential to ISM. Once work is identified, the ASF identifies the integrated work planning and control process to be used to plan a work activity. Specifically, identified work activities planned each fiscal year as part of the Site mission require an appropriate planning approach to ensure that work is performed safely.

The appropriate level of work planning is selected as a function of hazard, experience, uncertainty, and complexity. The ASF is designed to help RMs characterize activities, profile hazards, and identify infrastructure programs and level of planning that will be used to derive safety and compliance controls for preventing or mitigating the hazards posed by the activity under consideration. Figure 2-1 summarizes the role of the ASF within the context of the work planning processes.

### ACTIVITY SCREENING WITHIN OVERALL WORK PLANNING AND EXECUTION

Figure 2-1





## **2.4.1 Safety Equipment**

"Safety Equipment" is defined as a piece of equipment, personal protective equipment (PPE), system, etc. that controls hazards to an acceptable level of risk so that if used properly, there is a "practical certainty" that no harm will result to exposed workers, the public, or the environment. This includes engineered hazard controls, etc. but does not include administrative or procedural controls. For nuclear facilities, this definition includes the definition of safety-class and safety-significant structures, systems, and components as defined by the Nuclear Safety Manual.

Safety Equipment will be considered adequately validated and documented if it is approved by a recognized authority (i.e., ANSI, ASTM, UL, NFPA, etc.). This definition applies to the prioritization of work described in Table 2-1, Work Priority Descriptions. This will also help managers, engineers, and the planning team determine the importance of equipment and components used in the performance of the work activity and what level of certification and quality attributes are needed to ensure that the equipment will perform as needed. Equipment that is not important to safety will require a lower level of certification and quality attributes than Safety Equipment.

## **2.5 INSTRUCTIONS**

### **2.5.1 Emergencies**

#### **2.5.1.1 Emergency Response**

The first step in the planning process is to determine if a true emergency does or does not exist. True emergencies such as spills, fires, explosions, vehicle accidents, injuries and illnesses, etc. require emergency response, rather than a methodical evaluation of scope and hazards. Emergency responses are performed by trained professionals such as Emergency Medical Technicians and follow emergency response procedures rather than IWCP.

#### **2.5.1.2 Emergency Work**

Once a determination has been made that an emergency response is not required or has been completed, an activity is evaluated to see if it involves emergency work. Emergency work requires immediate action to prevent serious personal injury, harm to the environment, serious loss of property or breach of security or ensures regulatory compliance. If the activity involves emergency work then no additional screening is required and the work is performed in accordance with Chapter 9.

### **2.5.2 Non-Emergencies**

#### **2.5.2.1 Deficiencies and Repairs**

Once an activity has been determined not to involve emergency work, then a determination is made whether it involves a deficiency or a repair. If it does, first initiate a WCF, if not already opened. If it does not, then an ASF Screen 1 is initiated. If the work is not a deficiency or repair, a WCF is initiated after Screen 1 is completed. A WCF acts like a traveler for a WCD, summarizing data, determinations, choices and status. The form is filled out sequentially from origination through closure. Each section includes additional information necessary to ensure the IWCP process is followed. For work plans, procedures, preventive maintenance, and SWP development, the WCF is closed after the work document is approved.

### 2.5.2.2 Filling Out The WCF

#### Section 1 - Report Initiation

The originator uses this section of the WCF to document the details about the work activity. The data to be inserted in this section is self-explanatory.

**NOTE:** *The RM **Should** be contacted if the originator is uncertain about information in Sect. 1.*

#### Section 2 - Shift Manager/RM Review

The Shift Manager/RM **SHALL** review the WCF for any impacts on the safety or compliance status of the facility, along with any immediate impacts to any applicable AB documentation. Appropriate immediate actions **SHALL** be taken as required by any applicable AB and/or the COOP Manual.

#### Section 3 - Responsible Manager Evaluation

The RM completes this section of the WCF to assign a work priority, support requirements, work description, responsible organization, and a desired resolution date.

*If the identified condition is not considered to be deficient, or the work requested is not considered to be valid, then the RM disapproves the WCF, listing justification and returns the original WCF to the originator.*

#### Project Data

The RM **SHALL** also establish a priority for the work (Table 2-1) and if additional documentation or information is required, the RM **Should** return the WCF to the originator for the necessary documentation. RMs **may** develop procedures and processes to describe methods, in addition to IWCP, that are used to prioritize and schedule facility work activities.

**NOTE:** *If the work activity is determined to be Priority 1, Emergency Work, proceed directly to Chapter 9, Emergency Work Process. The WCF **may** be completed upon completion of the Emergency Work, if not completed earlier.*

**Table 2-1 – Work Priority Descriptions**

Number	Priority	Description
1	Emergency	Requires immediate action to prevent serious personal injury, harm to the environment, including hazardous waste spills, a breach to security, or a serious loss of property.
2	Urgent	Requires rapid action to ensure safety to personnel or the environment, to correct problems deemed critical to sustain the current mission of a facility, or to correct deficiencies in Special Nuclear Materials security alarm systems or environmental regulatory compliance facilities, systems, or hardware as defined in this procedure.
		2A Involves rework of safety class or safety significant system, structure or component
		2B Involves modifications to safety class or safety significant system, structure or component
		2C Involves safety work not involving equipment in 2A or 2B
		2D Involves work to maintain environmental regulatory compliance for facilities, systems, or hardware.
3	Required	Requires routine action to comply with technical or administrative requirements.
4	Desirable	Requires routine action to implement improvements or correct deficiencies not directly related to sustaining the mission of the facility.

The RM will complete the IMPACTS AND SUPPORT REQUIREMENTS SECTION of the WCF, by answering the following questions:

ENGINEERING SUPPORT NEEDED is circled YES if:

- The requested work activity replaces or modifies a system, structure or component with other than original or like-for-like replacement item
- The requested work changes physical configuration
- The requested work activity modifies the Site's technical basis configuration for a facility, system, structure or component, safety-related software or Site lands
- A replaced item requires more than minor connecting hardware for installation.

IMPACTS OSR/TSR is circled YES if:

- The requested work activity creates an out-of-tolerance condition per any AB
- The identified condition challenges an Operational Safety Requirement (OSR) / Technical Safety Requirement (TSR)

IMPACTS CRITICALITY SAFETY is circled YES if:

- The requested work activity requires modifications or repairs hardware important to criticality safety or software including limits
- The identified condition impacts an assumption or control identified in a Criticality Safety Evaluation.

AB SAFETY SYSTEM is circled YES if:

- The identified condition challenges the operability of equipment important to safety
- The requested work activity modifies or repairs equipment important to safety
- The requested work activity requires modification of equipment important to safety

IMPACTS ENVIRONMENTAL COMPLIANCE OR POSES ENVIRONMENTAL HARM is circled YES if:

- The requested work activity creates a change in existing environmental conditions
- The requested work activity impacts a regulatory requirement, permit condition or agency requirements

### **Davis-Bacon Section**

DAVIS-BACON REVIEW is circled YES if the work request is Davis-Bacon Act applicable in accordance with the requirements identified in the Davis-Bacon Process. Refer to Davis-Bacon Process, 1-W25-ADM-9.05.0

If YES was circled for Davis-Bacon Review, then a Scope and Estimate **SHALL** be performed and submitted for review in accordance with the Davis-Bacon Process. When a review is indicated, work cannot commence on the activity until after a determination has been made.

The RM **SHALL** circle either COVERED, NOT COVERED or BOTH based on the Davis-Bacon determination.

### **Minor Maintenance Determination**

The RM **SHALL** determine if the activity is minor maintenance based upon meeting all of the criteria listed below. Additional guidance to support completion of the Minor Maintenance determination is provided in brackets as applicable for the criteria below.

1. The component is not credited in the Authorization Basis, and the work to be performed will not affect or compromise the operability of any credited components. [In order to answer yes to this criterion, the component must be non-credited (i.e., credit not taken in the AB safety analysis for accident mitigation, such as System Category (SC) 1, 2, or some 3 components) and the system interactions have been identified and shown to have no effect on credited components.]
2. If the component is cited or credited within an AB document, the portion or part being worked clearly and obviously is not relied upon to satisfy or does not affect the component operability requirements. [In order to answer yes to this criterion, all AB controls and requirements associated with the component (SC 1, 2, or some 3 components) are identified and will be complied with.]
3. The integrity of a sealed component will not be violated (i.e. transformer) [A sealed component is; any manufactured component such as molded case circuit breakers, components where if a Manufacturer's seal is broken it would void a warranty, and manufactured components that are clearly and obviously not to be violated.]
4. Material substitutions will clearly and obviously not be involved. [In order to answer yes to this criterion, only identical or equivalent parts (as discussed in Chapter 4) will be used.]
5. Welding identified in the Site Quality Assurance Program to verify conformance shall not be performed.
6. The work performed is of such a minor nature that a written procedure is not required and it will not result in a modification. If a procedure exists, and it has been previously screened or Categorically Excluded by Nuclear Safety, it **may** be used.

If the activity is Minor Maintenance, circle YES on the WCF and conduct work per Chapter 8. Minor Maintenance is exempt from Safety Evaluation Screen/Unreviewed Safety Question Determination (SES/USQD) review per DOE Order 5480.21. No further actions on the WCF are required until the Minor Maintenance Activity is completed, then the WCF Closure – Section 5 **SHALL** be completed. Multiple Minor Maintenance activities **may** be performed against one WCF provided each activity meets the Minor Maintenance criteria in this chapter and it is adequately documented using a Minor Maintenance Documentation Report (Chapter 8).

**NOTE:** *Upon completion of Minor Maintenance activities, the system, structure, or component will be restored to compliance with its functional criteria. Requirements for returning systems and components to service are in the COOP Manual and the SERM.*

**NOTE:** *When more than one organization participates in the resolution process, the assignment reflects the organization with primary or lead responsibility; the Maintenance Manager **may** assume the lead responsibility.*

### **WCF Approval**

The RM **SHALL** assign the WCF to the Responsible Organization by recording the organization name on the RESPONSIBLE ORGANIZATION line (for example, Operations, Maintenance, or Engineering) and signing the form with his/her employee number.

Enter this information into the WCF Database and obtain the work control number, with the exception of WP&Ps discussed in Chapter 6. For WP&Ps, enter the procedure or plan number in the Work Control No. block on the WCF. The WCF is then forwarded to the Responsible Organization.

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#### Section 4 - Responsible Manager Planning

##### **Activity Screening Form Summary**

The RM **SHALL** complete the ASF per Appendices 2.2 and 2.3 of this chapter, if not previously performed, and document the PLANNING LEVEL by circling either HIGH, MEDIUM, or LOW, depending on the results of the ASF. Note that an ASF may have already been performed.

The relevant SME support based on the results of the ASF screen **SHALL** be documented by circling the appropriate discipline.

##### Work Document Selection

The RM **SHALL** determine the method for WCD development based on the following:

- Type 1 Work Package (Chapter 4) is used for activities that do not involve an engineering design package
- Type 2 Work Package (Chapter 4) is used for activities that require an engineering design package as defined by Site Engineering Process Procedure, 1-W51-COEM-DES-210
- Standard Work Package (SWP) (Chapter 5) is used for repetitive activities
- Work Plans and Procedures (Chapter 6) are used for those activities that do not fall under the category of maintenance or do not require an engineering design package. These are usually activities that are used for operations of equipment or systems, or risk reduction operations
- PMWP (Chapter 7) is used for those activities that are classified as Preventive Maintenance
- Minor Maintenance (Chapter 8) is used for activities that meet the definition under the Minor Maintenance Determination in Section 2.5.2.2

The RM **SHALL** then sign and record his/her employee number on the WCF. This information is then entered into the WCF Database, with the exception of WP&Ps discussed in Chapter 6. After an approved WCD (and a Preventive Maintenance Order for preventive maintenance) has been developed the work **may** be performed.

#### Section 5 - Closeout

The RM **SHALL** annotate whether or not the following activities were required for the WCD:

- Post Job Review performed
- Corrective Action Program action required
- Lessons Learned input performed
- Occurrence Report filed, including report number
- Should be filed in the Administrative Record (AR) if the work was a CERCLA action

The RM **SHALL** document if the work was canceled or completed, and close out the WCF in the WCF Database and sign the WCF for closure, except for open minor maintenance WCFs described in Chapter 8. Close out of the WCF in the database **SHALL** be completed in a timely fashion after the WP has been closed out.

The RM **SHALL** ensure that if the work was cancelled, the project/material was left in a safe configuration and that any work performed has been documented in accordance with the Site's Configuration Management Program and other applicable infrastructure programs as necessary.

**APPENDIX 2.1 - WORK CONTROL FORM**  
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<b>WORK CONTROL FORM</b>		Page 1 of 2
<b>WORK CONTROL NO.</b> <span style="border: 1px solid black; display: inline-block; width: 200px; height: 20px; vertical-align: middle;"></span>		
<b>SECTION 1</b>	<b>REPORT INITIATION</b>	
<b><u>ORIGINATOR DATA</u></b>		
NAME: _____ EMP NO: _____ DATE: _____ TIME: _____		
COMPANY/ORG: _____ BLDG: _____ EXT: _____		
SOURCE DOCUMENT NO.(Attach Copy): _____		
<b><u>EQUIPMENT/FACILITY DATA</u></b>		
DESCRIPTION OF WORK REQUEST: _____		
_____		
EM/PM NO: _____ BLDG NO: _____ LOCATION: _____		
EQUIPMENT NAME/DESCRIPTION: _____		
MANUFACTURER: _____ MODEL NO: _____ SERIAL NO: _____		
SYSTEM CATEGORY: 1/2 Credited 3 Other		
<b>SECTION 2</b>	<b>SHIFT MANAGER/RM REVIEW</b>	
Comments: _____		
_____		
SHIFT MANAGER SIGNATURE: _____ EMP NO: _____		
<b>SECTION 3</b>	<b>RESPONSIBLE MANAGER EVALUATION</b>	
<b><u>PROJECT DATA</u></b>		
PROGRAM AREA: _____ COMPLIANCE DATE (IF ANY): _____		
CORRECTIVE ACTION TITLE: _____		
PRIORITY LEVEL: 1 2 2A 2B 2C 2D 3 4 WBS CODE: _____		
RESOLUTION/COMMENTS: _____		
_____		
<b><u>IMPACTS AND SUPPORT REQUIREMENTS</u></b>		
ENGINEERING SUPPORT NEEDED:      Yes      No      IMPACTS OSR/TSR:      Yes      No		
IMPACTS CRITICALITY SAFETY:      Yes      No      AB SAFETY SYSTEM:      Yes      No		
IMPACTS ENVIRONMENTAL COMPLIANCE OR POSES ENVIRONMENTAL HARM:      Yes      No		
<b><u>DAVIS-BACON DETERMINATION</u></b>		
DAVIS-BACON REVIEW REQUIRED:      Yes      No		
DAVIS-BACON DETERMINATION:      Covered      Not Covered      Both		

**APPENDIX 2.1 – WORK CONTROL FORM**  
**Page 2 of 2**

WORK CONTROL FORM										Page 2 of 2
<p><b><u>MINOR MAINTENANCE DETERMINATION</u></b></p> <p>The following criteria must all be met in order to perform the activity as Minor Maintenance:</p> <ol style="list-style-type: none"> <li>1. The component is not credited in the Authorization Basis, and the work to be performed will not affect or compromise the operability of any credited components.</li> <li>2. If the component is cited or credited within an AB document, the portion or part being worked clearly and obviously is not relied upon to satisfy or does not affect the component operability requirements.</li> <li>3. The integrity of a sealed component will not be violated (i.e. transformer).</li> <li>4. Material substitutions will clearly and obviously not be involved.</li> <li>5. Welding identified in the Site Quality Assurance Program to verify conformance shall not be performed.</li> <li>6. The work performed is of such a minor nature that a written procedure is not required and it will not result in a modification. If a procedure exists, and it has been previously screened or Categorically Excluded by Nuclear Safety, it may be used.</li> </ol> <p>Minor Maintenance <b>SHALL</b> not result in modifications to equipment or facilities.</p> <p>MINOR MAINTENANCE:            Yes            No</p>										
<p><b><u>RM APPROVAL</u></b></p> <p>RESPONSIBLE ORGANIZATION: _____ DATE: _____ TIME: _____</p> <p>RESPONSIBLE MANAGER SIGNATURE: _____ EMP NO: _____</p>										
SECTION 4		RESPONSIBLE MANAGER PLANNING								
<p><b><u>ACTIVITY SCREENING FORM SUMMARY</u></b></p> <p>PLANNING LEVEL:    High        Medium    Low</p> <p>SME SUPPORT:       H&amp;S       RAD       NS       ENG       CRIT       ENV       OTHER</p>										
<p><b><u>WORK DOCUMENT SELECTION</u></b></p> <p>WCD TYPE:            Type 1       Type 2       SWP            WP&amp;P            PMWP            Minor Maintenance</p>										
<p><b><u>RM APPROVAL</u></b></p> <p>RESPONSIBLE MANAGER SIGNATURE: _____ EMP. NO.: _____</p>										
SECTION 5		CLOSEOUT								
<p><b><u>FEEDBACK</u></b></p> <p>POST JOB REVIEW:    Yes    No                    CAP: Yes    No</p> <p>LESSONS LEARNED INPUT:                    Yes    No</p> <p>OCCURRENCE REPORT:                    Yes    No                    REPORT NO.: _____</p> <p>PLACE IN AR FOR CERCLA ACTIONS:    Yes    No</p>										
<p><b><u>RM CLOSURE</u></b></p> <p>WORK IS:            Canceled                    Completed                    CLOSED IN WCF DATABASE                    Yes    No</p> <p>If cancelled, has the appropriate engineering analysis and contingency planning been performed                    Yes    No</p> <p>RESPONSIBLE MANAGER SIGNATURE: DATE: _____</p>										

**APPENDIX 2.2 - ACTIVITY SCREENING FORM**

<b>BLOCK A – ACTIVITY INFORMATION</b>	<b>BLOCK C – APPROVALS</b>		
Activity Title:	Responsible Manager (RM) Approval:		
	_____ Name (Print)	_____ Signature	_____ Ext.      _____ Date
Specific Work Location (s):	Confirmation from another RM (Score of 35-45 per Block E):		
	_____ Name (Print)	_____ Signature	_____ Ext.      _____ Date
Major Tasks/activities:	Environmental Manager: Evaluated need for an Environmental Checklist/Evaluation and initiated one if necessary.		
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	Planning Team Subject Matter Experts:		
	_____ Name	_____ Org.	_____ Name      _____ Org.
	_____ Name	_____ Org.	_____ Name      _____ Org.
	_____ Name	_____ Org.	_____ Name      _____ Org.
<b>BLOCK B – WORK ACTIVITY PRESCREEN -- SCREEN 1</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
1) Do work control documents that have been approved, reviewed or used within the past year exist to safely and compliantly perform the work requested?			
2) Are the conditions the same since the last time this activity was performed or the work control document was approved (i.e., work scope, hazards, hazard controls)?			
3) Have the impacts that this specific work activity can have on the requirements and controls of the applicable Authorization Basis (AB) documentation (Nuclear Facility ABs and/or the Site SAR [refer to Appendix 2.4 to determine Site SAR applicability] ) been determined?			
Check Appropriate Box <input type="checkbox"/> If questions 1 through 3 are answered <b>YES</b> , completion and documentation of this ASF is not required for work planning, however, it may be required for procurement activities per acquisition procedure, 1-W36-APR-111. <input type="checkbox"/> If any one or more of questions 1 through 3 are answered <b>NO</b> , then ASF Screens 2 and 3 must be completed.			



APPENDIX 2.2 - ACTIVITY SCREENING FORM

BLOCK D – SCREEN 2 PRELIMINARY HAZARD PROFILE/SME SUPPORT DETERMINATION		Yes	No	SME Support						
				H&S	RAD	NS	ENG	CRIT	ENV	Other
<b>Does the work activity involve any of the following:</b>										
4)	Use of non-ionizing radiation sources or devices, other than welding equipment ( <i>e.g., lasers, microwaves</i> )?			X						
5)	Entry into a confined space?			X						FP
6)	Potential for exposure to any electrical, mechanical ( <i>e.g., rotating equipment, water hammer</i> ), hydraulic or pressure systems; compressed gases; or pressure vessels that are not controlled or protected from direct exposure to the workers?			X			X	X		
7)	Worker exposure to chemical environments that may be Immediately Dangerous to Life and Health ( <i>e.g., Carbon Monoxide, Carbon Dioxide, or oxygen deficient atmospheres</i> )?			X						
8)	Inhalation, ingestion, or injection hazards related to lead, lead products, or lead contaminated equipment; beryllium or beryllium contaminated equipment; or to carcinogenic materials ( <i>e.g., PCBs, asbestos</i> )?			X						
9)	a) Vehicle access into the Protected Area, including unsearchable vehicles; b) non-cleared or foreign national personnel access into security areas; c) classified, unclassified controlled nuclear information, sensitive, or export controlled matter; d) closing of any roadways; e) use of transmitting devices or privately (non-government) owned computer equipment in the Protected Area; f) transport of bulk items across security boundaries; and g) cash assets and/or high value government equipment subject to theft?									S&S
10)	Access, generation, storage, destruction, or discussion of classified information or sensitive unclassified controlled nuclear information, export company proprietary, company sensitive?									S&S
11)	The potential to involve personnel security issues such as: a) personal security concerns; b) politically/socially sensitive activities likely to result in public protest activities; c) significant potential for labor dispute; and d) have significant sabotage potential (which might result in public risk, work schedule slippage, milestone missed, or DOE/contractor embarrassment)?									S&S
12)	Be performed on, near, or in the vicinity of any security system, boundary, or barrier ( <i>e.g., Perimeter Intrusion Detection and Alarm System, alarm or access system, Material Access Area boundary, emergency power system, or trunked radio communication system</i> )?									S&S
13)	Use of radioactive sources, or radiation producing devices, or devices which contain radioactive sources, other than radiological check sources ( <i>e.g., radiography, x-ray machines</i> )?				X					
14)	Work to be performed inside of a: a) contamination area; b) high contamination area; c) airborne radioactivity area; or d) area previously designated as one of these?				X					
15)	Work to be performed inside of a: a) radiation area; b) very high radiation area; or c) area previously designated as one of these?				X					

Note: Criticality Engineering support is only required whenever work is within the purview of buildings that are governed by the Nuclear Criticality Safety Manual. H&S – Health & Safety, RAD – Radiological Engineering/Operations, NS – Nuclear Safety, ENG – Engineering, CRIT – Criticality Engineering, ENV – Environmental, FP – Fire Protection Engineering or Fire Department as appropriate, FSC – Firearms Safety Committee, S&S – Safeguards & Security, TRAN – Transportation, WO – Waste Operations

APPENDIX 2.2 - ACTIVITY SCREENING FORM

BLOCK D – SCREEN 2 PRELIMINARY HAZARD PROFILE/SME SUPPORT DETERMINATION		Yes	No	SME Support						
				H&S	RAD	NS	ENG	CRIT	ENV	Other
<b>Does the work activity involve any of the following:</b>										
16) Work with, processing, or packaging radioactive material including radioactive wastes and/or fissile material which may require criticality controls?						X	X		X	
17) Work with non-radioactive pyrophoric materials (e.g., materials susceptible to spontaneous combustion, such as sodium)?						X				X FP
18) Use of regulated chemicals or generation of regulated waste chemicals?									X	WO
19) Environmental monitoring (air, ecology, soil, or water) required in the work area?									X	
20) Disturbance of soil, concrete, or asphalt (activities requiring a soil permit or disposition of large amounts of concrete or asphalt)?						X	X		X	WO
21) Work area, or any of its contents, subject to any environmental regulations, agency agreements, compliance order agreement, or regulatory permits/authorizations?									X	
22) Equipment impacted/modified by this activity that interacts with any environmental compliance monitoring system?								X	X	
23) Generation of wastes or wastewater (e.g., sanitary, hazardous (RCRA), asbestos, PCB, medical or infectious, low level, transuranic, beryllium contaminated, or oily waste)?						X	X		X	WO
24) Generation of emissions to the air that are not already approved (e.g., unfiltered contributions to an exhaust stack, fugitive emissions, ozone depleting substances, use of diesel fuel, diesel powered equipment, fugitive dusts, or other issues)?						X	X		X	
25) A release or discharge, or a potential for a release or discharge to soil or surface waters such as streams, wetlands (marshy or boggy area), storm drains, sanitary sewers, or ponds?						X			X	
26) Construction of a waste treatment, storage, or disposal unit; or work within a RCRA regulated unit or an Individual Hazardous Substance Site or other CERCLA sites as defined within the RFCA?						X	X	X	X	WO
27) Modification of a RCRA or PCB storage unit (e.g., berms or flooring for containment)?						X		X	X	
28) During the normal conduct of this work activity (no upsets or accidents):									X	
<ul style="list-style-type: none"> <li>Potential to disturb migratory birds or any threatened, endangered, or special-concern species</li> <li>Potential to adversely affect any wetland, designated natural area, surface or groundwater, or cultural resources?</li> <li>Is the activity perceived to have any impact or potential impact on the environment?</li> </ul>										
29) Firearms or explosives (excludes explosive chemicals which are included in the next question)?						X			X	FP, S&S FSC

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APPENDIX 2.2 - ACTIVITY SCREENING FORM

BLOCK D - SCREEN 2 PRELIMINARY HAZARD PROFILE/SME SUPPORT DETERMINATION		Yes	No	SME Support						
				H&S	RAD	NS	ENG	CRIT	ENV	Other
<b>Does the work activity involve any of the following:</b>										
30) Work with reactive, shock sensitive, explosive (e.g., natural gas, hydrogen, propane) or incompatible chemicals or materials, including decomposition and radiolysis byproducts?				X					X	FP
31) Moving, handling, or transporting Special Nuclear Material, TRU, TRM, or other radioactive, or radioactive pyrophoric, material including liquids?					X	X		X	X	TRAN S&S
32) Installation, modification, relocation, or removal of: 1) any process, building, wall (including fire walls/barriers), enclosure, or tank (above or under ground), 2) a radioactively contaminated; system, process line, or installed piece of equipment; or 3) permanent radiation shielding; that may impact the condition of structures, systems, or components?				X	X	X	X	X	X	FP
33) Any form of welding, cutting, or the use of ignition sources such as, furnaces, hot plates, sparks, open flames (i.e., "hot work")?				X				X		FP
34) Work to be performed near or in the vicinity of any hazardous material, substance, or equipment which is not directly in the scope of this work activity, but has the potential to exacerbate the hazards associated with this or create additional hazards?				X				X	X	
35) Is there a potential for this work activity to have an undesirable impact on, or in a Hazard Category 2/3 nuclear facility, its support systems, or its authorization basis documentation requirements or controls or the Site SAR? (Includes physical or structural impacts from construction or modifications; utility or support system impacts, such as domestic water, fire water, steam, or electric power; alarms; or analytical impacts from unanalyzed scenarios, such as external events involving the operation of aircraft, trains, or tankers near the nuclear facility. Includes facility radioactive and hazardous material inventory limits, site engineered controls [i.e.: utilities, site systems, propane tank restrictions, pressure relief devices, etc.], site transportation controls, wooden waste box storage controls and safety management programs)				X	X	X	X	X	X	FP S&S
36) Any ergonomic hazards (i.e., does the activity involve a combination of the following: working in awkward postures, repetitive motion, and/or the use of force to complete the task)?				X						
37) Work with NEW processes, equipment, or tools?				X	X		X			Train- ing
38) Affect any other programs or areas not previously identified? SME support as required by the activity.										
39) Were any of the questions above answered yes that require Environmental or Waste Operations involvement? If yes, see Appendix 2.3, ASF Guide.										
<b>BLOCK D SUMMARY</b>										
<b>Sum of the total number of questions answered yes in BLOCK D:</b>										

Note: Criticality Engineering support is only required whenever work is within the purview of buildings that are governed by the Nuclear Criticality Safety Manual. H&S – Health & Safety, RAD – Radiological Engineering/Operations, NS – Nuclear Safety, ENG – Engineering, CRIT – Criticality Engineering, ENV – Environmental, FP – Fire Protection Engineering or Fire Department as appropriate, FSC – Firearms Safety Committee, S&S – Safeguards & Security, TRAN – Transportation, WO – Waste Operations

APPENDIX 2.2 - ACTIVITY SCREENING FORM

BLOCK E -- SCREEN 3 PLANNING PROCESS SCREEN	YES	NO	SCORE
<b>HAZARD</b>			
40) Is the Sum of all YES answers in Block D 0 - 5?	4	0	
41) Is the Sum of all YES answers in Block D 6 -10?	8	0	
42) Is the Sum of all YES answers in Block D $\geq$ 11?	14	0	
43) Will the work activity be performed in a Hazard Category 2/3 nuclear facility ( <i>defined in the Site SAR, Vol. 1, Ch. 4</i> )?	4	0	
44) Is this work activity authorized to be performed by the existing authorization basis (AB) documentation (Nuclear facility ABs or the Site SAR) or regulatory permits/authorizations?	0	4	
45) Is there a potential for this work activity to have an undesirable impact on, or in a Hazard Category 2/3 nuclear facility, its support systems, or its authorization basis documentation requirements or controls or an impact to the environment?	2	0	
46) Is there a potential for this work activity to have an undesirable impact on a Site SAR requirement or control (see Appendix 2.4)?	2	0	
47) Has an analysis of the potential hazards of this work activity or other uncertainties been completed, including the identification of required controls, and has it been documented to support the safety basis or authorization basis for this work activity?	0	4	
48) Can the combined effect of the hazards potentially create additional hazards ( <i>e.g., incompatible chemicals, synergistic impacts</i> )?	4	0	
49) Can the combined effect of the hazards cause a potential conflict in the controls ( <i>e.g., Radiological Work Permit requires glovebag for containment and criticality limits restrict how much liquid can accumulate in glovebag</i> )?	4	0	
<b>EXPERIENCE</b>			
50) Have the majority of the personnel (project manager, planners, workers, safety professionals, support staff, etc.) proposed to perform this work activity previously performed <b>ALL</b> of this work activity at the Site or any other site within the past 36 months?	0	4	
51) Have the majority of the personnel (project manager, planners, workers, safety professionals, support staff, etc.) proposed to perform this work activity previously performed <b>PORTIONS</b> of this work activity at the Site or any other site within the past 36 months?	0	8	

## APPENDIX 2.2 - ACTIVITY SCREENING FORM

BLOCK E -- SCREEN 3 PLANNING PROCESS SCREEN COMPLEXITY		YES	NO	SCORE
52) How many major tasks/activities are involved in this work activity ( <i>e.g., install tap, drain tank, disposition liquid, install electrical distribution, site excavation</i> )?				
Low Complexity $\leq 5$ tasks		0	0	
Medium Complexity 6 – 9 tasks		1	0	
High Complexity $\geq 10$ tasks		2	0	
53) How many people are involved in actually performing this work activity ( <i>includes support people on scene at any given time or shift, does not include oversight</i> )?				
Low Complexity $\leq 10$ people		0	0	
Medium Complexity 11 – 24 people		1	0	
High Complexity $\geq 25$ people		2	0	
54) How many functional organizations provide support during the performance of this work activity ( <i>e.g., process specialists, RCTs, IH, FI, NS, CRIT</i> )?				
Low Complexity $\leq 4$ organizations		0	0	
Medium Complexity 5 – 9 organizations		1	0	
High Complexity $\geq 10$ organizations		2	0	
55) How many contractors are directly involved in actually performing this work activity?				
Low Complexity $\leq 3$ subcontractors		0	0	
Medium Complexity 4 – 7 subcontractors		2	0	
High Complexity $\geq 8$ subcontractors		4	0	
<b>SCORING</b>		<b>TOTAL SCORE</b>		
Add the total scores from lines 40 through 55				
Check	<input type="checkbox"/> If The Total Score is <b>0 to 15</b> , the level of planning required is <b>LOW</b>			
Appropriate	<input type="checkbox"/> If The Total Score is <b>16 to 40</b> , the level of planning required is <b>MEDIUM</b>			
Box	<input type="checkbox"/> If The Total Score is <b>41 or greater</b> , the level of planning required is <b>HIGH</b>			
<b>NOTE:</b> If the total score is between 35 and 45, the RM <b>SHALL</b> obtain confirmation of the selected level from another RM. From this confirmation, the RM has the option to revise the selection. The RM has the final responsibility for selection of the work planning process; however, senior management may elect to upgrade the level of planning at their discretion.				

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## APPENDIX 2.3 - ACTIVITY SCREENING FORM GUIDE

### Activity Screening Form (ASF) Instructions

The purposes of the ASF are to identify the programs and SMEs that need to be involved in the planning process and to determine which level of planning is required. A more detailed analysis of the hazards involved is accomplished through the JHIT/JHA process. This guide gives instruction in filling out the ASF, the SMEs required for planning based on the ASF results, and clarification of the questions, examples, and references.

The scope of work for large projects should be developed and broken down into smaller manageable activities, as long as the activity and hazards have been looked at as a whole to determine if there are any combined hazards. Each activity should be small enough so that it may be adequately controlled by the RM, allowing safe and compliant performance of the work. Each activity should also be small enough so that the work, regulatory, and safety requirements can be understood by the project planning team and the workers performing the activity.

The scope of projects **SHALL** not be broken down solely to allow a less rigorous level of review and planning. Projects may be broken down resulting in a less rigorous level of review and planning if it is good project management, such as separate and distinct work scopes, areas, and/or time frames for the project.

The generation of a WCF and an ASF facilitates the decision-making processes which are essential to work control integration. Once work is identified, the ASF identifies the integrated work planning and control process to be used to plan a work activity. Specifically, identified work activities planned each fiscal year as part of the Site mission require an appropriate planning approach to ensure that work is performed safely. The appropriate level of work planning is selected as a function of hazard, experience, uncertainty, and complexity. The ASF is designed to help RMs characterize activities, profile hazards, and identify infrastructure programs and level of planning that will be used to derive safety and compliance controls for preventing or mitigating the hazards posed by the work activity under consideration. Figure 2-1 in Section 2.4 summarizes the role of the ASF within the context of the overall work planning processes.

The ASF (see Appendix 2.2) is divided into five main parts; each described in more detail below.

**Block A: Activity Information** – Describe the activity to be performed, where it will be located, and the major tasks and activities that will be performed.

**Block B, Screen 1: Activity Prescreen** - Determine if the work activity to be performed needs further, more detailed screening per this process (for example, perform a prescreen per this process to establish whether the work activity requires assessment to support selecting a work planning process).

Prior to starting this process, the RM collects all available information related to the activity being planned. Once this information is collected, the RM begins the ASF by documenting the project/activity title, description, and specific work location on the first page of the ASF. The RM then completes a prescreen (Screen 1) for the activity. The questions answered for Screen 1 are used to determine if the activity can be performed using existing WCDs with no further screens required. If additional screens are required, then complete both Screens 2 and 3 of the ASF.

If all of the questions in Screen 1 are answered Yes, then no documentation is needed prior to commencing work, and the ASF will not need to be retained as a quality record. However, if the ASF is being conducted for procurement such as new Statement of Works or modifications/changes to existing Statement of Works, then the ASF **SHALL** be retained with the Statement of Work even if all the questions in Screen 1 are answered Yes.

**Block C: Approvals** – The RM approves the ASF. Another RM confirms the ASF if the activity has a score of 35-45 as determined in Block E. The Environmental Manager also signs if question 39 is answered YES.

**Block D, Screen 2: Preliminary Hazard Profile** - Perform a profile assessment of the type of hazards associated with the activity (for example, occupational safety, radiological, or environmental hazards) and determine the number of hazard types to be addressed by the work planning process.

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### APPENDIX 2.3 - ACTIVITY SCREENING FORM GUIDE

The Preliminary Hazard Profile is used to determine the types of hazards involved with the work activity by answering questions relevant to the number of potential hazards present in the work activity. The overall number of hazards of the work activity is used as data input for the scoring and answering the Planning Process Screen. In addition, the relevant SMEs that are identified in Screen 2 can assist the RM in completing the screens and in implementation of the selected level of planning.

**Block E, Screen 3: Planning Process Screen** - Select the appropriate level of planning to be used for the activity.

The Planning Process Screen is used to select the required level of planning to be performed, which is graded to the hazards, uncertainty, and complexity of the work activity so that the appropriate hazards assessment and safety and compliance controls development tools and techniques are selected. The expectation is that implementation of those controls will result in the work activity being performed safely. After the appropriate level of planning has been selected using the ASF, the RM and a selected team of SMEs conduct the work activity planning. The SMEs are selected from the programs identified in the ASF.

The RM is responsible for completing and approving the ASF Screens. However, it is recommended that the RM obtain SME support to ensure the work activity has been properly scoped and characterized prior to and during screening.

#### PROCESS OVERVIEW:

The RM **SHALL**:

- Complete Block A of the ASF, Activity Information
- Complete Block B - Activity Prescreen -Screen 1
- If questions 1 through 3 are answered **YES**, completion and documentation of the ASF is not required for work planning, however, it may be required for procurement activities per APR-111.
- If any one or more of questions 1 through 3 are answered **NO**, then ASF Screens 2 and 3 must be completed.
- If Screen 2 is required, complete Block D by checking YES or NO for each hazard listed
- Total the number of Yes answers in Screen 2, then proceed to Screen 3
- If Screen 3 is required, complete all sections in Block E
- Sum the Score column for lines 40 through 55 and enter this as a total score
- If the TOTAL SCORE is between 0 and 15, use the LOW planning level requirements for this work activity.
- If the TOTAL SCORE is between 16 and 40, use the MEDIUM planning level requirements for this work activity.
- If the TOTAL SCORE is equal to or greater than 41, use HIGH planning level requirements for this work activity.
- If the total score is between 35 and 45, the RM **SHALL** obtain confirmation of the selected level from another RM. From this confirmation, the RM has the option to revise the selection. The RM has the final responsibility for selection of the work planning process; however, senior management **may** elect to upgrade the level of planning at their discretion.
- Complete Block C of the ASF.
- The RM **SHALL** use SME expertise as necessary to accurately complete the ASF.

### APPENDIX 2.3 - ACTIVITY SCREENING FORM GUIDE

<b>BLOCK A – ACTIVITY INFORMATION</b>
<b>Activity Title</b>
Give title of the project or sub-project that will be covered by the work package/procedure to be developed.
<b>Specific Work Location (s)</b>
Give building or area where the work will be performed.
<b>Major Tasks/activities</b>
Give a listing of the major activities and tasks that will be required to perform the work.
<b>BLOCK B – WORK ACTIVITY PRESCREEN -- SCREEN 1</b>
1) Do work control documents that have been approved, reviewed or used within the past year exist to safely and compliantly perform the work requested?
Are there approved procedures, required permits in place, standard work packages, work packages, preventive maintenance WP, environmental checklist, operations orders, etc. that can be used to perform the work? Do you need a work document? For the prescreened activities identified in Section 2.3, this question <b>may</b> be answered "Yes". For activities determined to be Minor Maintenance using the WCF Minor Maintenance criteria, Chapter 8, Minor Maintenance is considered to be the approved WCD. Review means that the original ASF, JHIT, and JHA are reviewed to ensure that the hazards and hazard controls identified are still adequately implemented in the WCD. Any WCD reviews used to satisfy this prescreen question <b>SHALL</b> be documented in the work control document history file.
2) Are the conditions the same since the last time this activity was performed or the work control document was approved (i.e., work scope, hazards, hazard controls)?
This is meant to look at any changes that could be significant to performing the work safely. Are the work scope, the hazards and hazard controls the same so that the work would be expected to have similar results and effects as when it was previously performed? This is not meant to include minor, insignificant changes. Has an Environmental Checklist been completed if needed?
3) Have the impacts that this specific work activity can have on the requirements and controls of the applicable Authorization Basis (AB) documentation (Nuclear Facility ABs and/or the Site SAR [refer to Appendix 2.4 to determine Site SAR applicability] ) been determined?
Has the work had a nuclear safety evaluation screen performed for it or has it been excluded from this requirement? Is there documentation (i.e., SES/USQD, categorical exclusion, AB, etc.) that allow the work to be performed?
<b>Check Appropriate Box</b>
Check the appropriate box to show the results of Screen 1. If questions 1 through 3 are answered <b>YES</b> , completion and documentation of this ASF is not required for work planning, however, it may be required for procurement activities per acquisition procedure, 1-W36-APR-111.
If any one or more of questions 1 through 3 are answered <b>NO</b> , then ASF Screens 2 and 3 must be completed.
<b>BLOCK C – APPROVALS</b>
<b>Responsible Manager Approval:</b>
The RM is the manager directly responsible and accountable for the development, implementation, and performance of the work (For example, Facility Manager, Building Manager, Operations Manager, Maintenance Manager, Engineering Manager, and/or Project Manager).
<b>Confirmation from another RM (Score of 35-45 per Block E):</b>
If the total score from Screen E, Block 3, is between 35 and 45, the RM <b>SHALL</b> obtain confirmation of the selected level from another RM. From this confirmation, the RM/PM has the option to revise the selection. The RM/PM has the final responsibility for selection of the work planning process; however, senior management may elect to upgrade the level of planning at their discretion.
<b>Environmental Manager: Evaluated need for an Environmental Checklist/Evaluation and initiated one if necessary.</b>
If question 39 is answered YES, the Environmental Manager <b>SHALL</b> evaluate if an Environmental Checklist is necessary and if it is, they shall begin the process to perform one and get it approved.
<b>Planning Team Subject Matter Experts:</b>
These are the SMEs that the RM requests to be assigned to support the planning effort. The programmatic areas identified in the ASF <b>SHALL</b> be represented on the work planning team.
<b>BLOCK D – SCREEN 2</b>
4) Use of non-ionizing radiation sources or devices, other than welding equipment?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS: Health &amp; Safety.</b>
For example, lasers, microwaves, etc.



### APPENDIX 2.3 - -ACTIVITY SCREENING FORM GUIDE

5) Entry into a confined space?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Fire Department A confined space is defined as - A space that is: Large enough and so configured that an employee can bodily enter and perform assigned work, has limited or restricted means for entry or exit (i.e., tanks, vessels, silos, storage bins, hoppers, vaults and pits are spaces that may have limited entry), and is not designed for continuous employee occupancy. (MAN-072-OS&IH PM, OS&IH Program Manual, Chapter 21)
6) Potential for exposure to any electrical, mechanical, hydraulic or pressure systems; compressed gases; or pressure vessels that are not controlled or protected from direct exposure to the workers?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Engineering, Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual. For example, mechanical systems could include rotating or cutting equipment. This is to help determine if engineering controls can be used to control the hazard or if administrative controls would be required. Water hammer in steam lines can potentially expose workers to uncontrolled energy. Refer to Standing Order 23, <i>Operation of Steam and Condensate Systems</i> for the requirements for restoring steam lines, if applicable.
7) Worker exposure to chemical environments that may be Immediately Dangerous to Life and Health?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety For example, carbon monoxide, carbon dioxide, or oxygen deficient atmospheres.
8) Inhalation, ingestion, or injection hazards related to lead, lead products, or lead contaminated equipment; beryllium or beryllium contaminated equipment; or to carcinogenic materials?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety For example, lead dust/vapors, PCBs, asbestos, beryllium, etc.
9) a) Vehicle access into the Protected Area, including unsearchable vehicles; b) non-cleared or foreign national personnel access into security areas; c) classified, unclassified controlled nuclear information, sensitive, or export controlled matter; d) closing of any roadways; e) use of transmitting devices or privately (non-government) owned computer equipment in the Protected Area; f) transport of bulk items across security boundaries; and g) cash assets and/or high value government equipment subject to theft?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Safeguards & Security
10) Access, generation, storage, destruction, or discussion of classified information or sensitive unclassified controlled nuclear information, export company proprietary, company sensitive?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Safeguards & Security
11) The potential to involve personnel security issues such as: a) personal security concerns; b) politically/socially sensitive activities likely to result in public protest activities; c) significant potential for labor dispute; and d) have significant sabotage potential?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Safeguards & Security Sabotage, which might result in public risk, work schedule slippage, milestone missed, or DOE/contractor embarrassment.
12) Be performed on, near, or in the vicinity of any security system, boundary, or barrier?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Safeguards & Security For example, Perimeter Intrusion Detection and Alarm System, alarm or access system, Material Access Area boundary, emergency power system, or trunked radio communication system.
13) Use of radioactive sources, or radiation producing devices, or devices which contain radioactive sources, other than radiological check sources?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Radiological Operations/ Engineering For example, radiography, x-ray machines, etc.
14) Work to be performed inside of a: a) contamination area; b) high contamination area; c) airborne radioactive area; or d) area previously designated as one of these?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Radiological Operations/ Engineering
15) Work to be performed inside of a: a) radiation area; b) very high radiation area; or c) area previously designated as one of these?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Radiological Operations/ Engineering

## APPENDIX 2.3 - ACTIVITY SCREENING FORM GUIDE

16) Work with, processing, or packaging radioactive material including radioactive wastes and/or fissile material which may require criticality controls?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Radiological Operations/ Engineering, Nuclear Safety, Criticality Engineering
17) Work with non-radioactive pyrophoric materials?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Environmental, Fire Protection Engineering or Fire Department For example, materials susceptible to spontaneous combustion, such as sodium, etc. Pyrophoric material is a material which under normal conditions is liable to cause fires through friction, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation, handling or disposal hazard. (5820.2A) It is also defined as a substance that ignites spontaneously in air below 130F (54.4C), for example, Phosphorus.
18) Use of regulated chemicals or generation of regulated waste chemicals?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Environmental, Waste Operations
19) Environmental monitoring (air, ecology, soil, or water) required in the work area?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Environmental Does this activity require any additional monitoring for air, soil, or water to detect a possible release of a regulated substance or waste?
20) Disturbance of soil, concrete, or asphalt?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Radiological Operations/ Engineering, Environmental, Waste Operations This is for activities requiring a soil disturbance permit or disposition of large amounts of concrete or asphalt.
21) Work area, or any of its contents, subject to any environmental regulations, agency agreements, compliance order agreement, or regulatory permits/authorizations?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Environmental This includes the Rocky Flats Cleanup Agreement, Resource Conservation and Recovery Act Permit, Title V Clean Air Permit, Compliance Orders, Mixed Residue Compliance Order, Site Treatment Plan, National Pollution Discharge Elimination System Permit, or any other compliance orders with the Environmental Protection Agency or the Colorado Department of Public Health and Environment. Regulations include the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation, and Liability Act, Clean Air Act, Clean Water Act or the Toxic Substance Control Act.
22) Equipment impacted/modified by this activity that interacts with any environmental compliance monitoring system?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Engineering, Environmental, Waste Operations For example, the exhaust of a ventilation system which has an air monitor installed, or power to an environmental compliance system. Examples of environmental compliance monitoring systems are; air monitors, gauging systems, etc.
23) Generation of wastes or wastewater?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Radiological Operations/ Engineering, Environmental For example, sanitary, hazardous (RCRA), asbestos, PCB, medical or infectious, lead, low level, transuranic, beryllium contaminated, or oily waste.
24) Generation of emissions to the air that are not already approved?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Radiological Operations/ Engineering, Environmental For example, unfiltered contributions to an exhaust stack, fugitive emissions, ozone depleting substances, use of diesel fuel, diesel powered equipment, fugitive dusts, or other issues.
25) A release or discharge, or a potential for a release or discharge to soil or surface waters such as streams, wetlands (marshy or boggy area), storm drains, sanitary sewers, or ponds?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Environmental For example, soil disturbances near culverts, or drainages where soils can enter site waterways, or <u>any</u> disturbance in a wetland.
26) The construction of a waste treatment, storage, or disposal unit; or work within a RCRA regulated unit or an Individual Hazardous Substance Site or other CERCLA sites as defined within the RFCA?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Radiological Operations/ Engineering, Engineering, Environmental, Waste Operations

## APPENDIX 2.3 - ACTIVITY SCREENING FORM GUIDE

27) Modification of a RCRA or PCB storage unit?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Engineering, Criticality Engineering, Environmental For example, changing the berms or flooring for containment.
28) During the normal conduct of this work activity (no upsets or accidents): Potential to disturb migratory birds or any threatened, endangered, or special-concern species Potential to adversely affect any wetland, designated natural area, surface or groundwater, or cultural resources? Is the activity perceived to have any impact or potential impact on the environment?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Environmental Threatened, endangered, or special-concern species (For example, Preble's Meadow Jumping Mouse, Bald Eagle, etc.). Cultural resources examples include historical, archaeological, or architectural sites. Is the activity perceived to have any impact or potential impact (beneficial or negative) on the environment?
29) Firearms or explosives?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Environmental, Fire Protection Engineering or Fire Department, Safeguards & Security, Firearms Safety Committee, Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual. Excludes explosive chemicals which are included in the next question.
30) Work with reactive, shock sensitive, explosive or incompatible chemicals or materials, including decomposition and radiolysis byproducts?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Environmental, Fire Protection Engineering or Fire Department Explosive is defined as any chemical compound or mechanical mixture that, when subjected to heat, impact, friction, shock, or other suitable initiation stimulus, undergoes a very rapid chemical change with evolution of large volumes of highly heated gases that exert pressures in the surrounding medium. The term applies to materials that either detonate or deflagrate. (6430.1A) For example, natural gas, hydrogen, propane. Shock sensitive is defined as a material which undergoes visible reaction when mechanically shocked. Radiolysis is defined as a reaction produced by radiation (usually decomposition).
31) Moving, handling, or transporting Special Nuclear Material, TRU, TRM, or other radioactive, or radioactive pyrophoric, material including liquids?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Radiological Operations/ Engineering, Nuclear Safety, Criticality Engineering, Environmental, Transportation, Safeguards & Security See DOE Orders; 5633.3, Change 1; 5500.1A, Change 1; 5632.1A; and 5631.2B for the definition of Special Nuclear Material. Transuranic Waste is defined as – Without regard to source or form, waste is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay. Heads of Field Elements can determine that other alpha contaminated wastes, peculiar to a specific site, must be managed as transuranic waste. (5820.2A)
32) Installation, modification, relocation, or removal of: 1) any process, building, wall (including fire walls/barriers), enclosure, or tank (above or under ground), 2) a radioactively contaminated; system, process line, or installed piece of equipment; or 3) permanent radiation shielding; that may impact the condition of structures, systems, or components?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Radiological Operations/ Engineering, Nuclear Safety, Engineering, Criticality Engineering, Environmental, Fire Protection Engineering
33) Any form of welding, cutting, or the use of ignition sources such as static electricity, furnaces, hot plates, sparks, open flames?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Fire Protection Engineering or Fire Department, Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual. Hot work is any temporary operation involving open flames or producing heat and/or sparks including brazing, cutting, grinding, soldering, arc welding or torch applied welding outside of a designated welding area, i.e., shop.
34) Work to be performed near or in the vicinity of any hazardous material, substance, or equipment which is not directly in the scope of this work activity, but has the potential to exacerbate the hazards associated with this or create additional hazards?
<b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health & Safety, Environmental, Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual.

### APPENDIX 2.3 - ACTIVITY SCREENING FORM GUIDE

<p><b>35) Is there a potential for this work activity to have an undesirable impact on, or in a Hazard Category 2/3 nuclear facility, its support systems, or its authorization basis documentation requirements or controls or the Site SAR?</b></p> <p><b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health &amp; Safety, Radiological Operations/Engineering, Nuclear Safety, Engineering, Criticality Engineering, Environmental, Fire Protection Engineering, Safeguards &amp; Security. Includes physical or structural impacts from construction or modifications; utility or support system impacts, such as domestic water, fire water, steam, or electric power; alarms; or analytical impacts from unanalyzed scenarios, such as external events involving the operation of aircraft, trains, or tankers near the nuclear facility. Includes facility radioactive and hazardous material inventory limits, site engineered controls [i.e.: utilities, site systems, propane tank restrictions, pressure relief devices, etc.], site transportation controls, wooden waste box storage controls and safety management programs.</p> <p>Hazard Categories. The consequences of unmitigated releases of radioactive and/or hazardous material <b>SHALL</b> be evaluated and classified by the following hazard categories:</p> <ul style="list-style-type: none"> <li>• Hazard Category 2: The hazard analysis shows the potential for significant on-site consequences</li> <li>• Hazard Category 3: The hazard analysis shows the potential for only significant localized consequences</li> </ul>
<p><b>36) Any ergonomic hazards?</b></p> <p><b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health &amp; Safety</p> <p>i.e., does the activity involve a combination of the following: working in awkward postures, repetitive motion, and/or the use of force to complete the task. Ergonomics is the field of study that seeks to fit the job to the person, rather than the person to the job. This is achieved by the evaluation and design of workplaces, environments, jobs, tasks, equipment and processes in relationship to human capabilities and interactions in the workplace. An ergonomic hazard is a physical state of the work environment which is incompatible with the physical or psychological capabilities and limitation of people and which may cause injury to employees. Ergonomic hazards include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Repetitive motion of body parts required to perform work</li> <li>• Excessive force applied and required to perform work</li> <li>• Awkward body postures required to perform work</li> </ul>
<p><b>37) Work with NEW processes, equipment, or tools?</b></p> <p><b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Health &amp; Safety, Radiological Operations/Engineering, Engineering, Training</p> <p>Are there any new processes, equipment or tools being used to perform the work?</p>
<p><b>38) Affect any other programs or areas not previously identified?</b></p> <p><b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> SME support as required by the activity</p>
<p><b>39) Were any of the questions above answered yes that require environmental or waste operations involvement?</b></p> <p><b>SME SUPPORT REQUIRED FOR THE PLANNING PROCESS:</b> Environmental</p> <p>If any of the previous questions were answered yes that require environmental or waste operations support, the Environmental Manager will determine if an Environmental Checklist or Environmental Evaluation is required and prepare it as necessary in accordance with Implementation of NEPA Documentation, 1-25000-EPR-NEPA.001</p>
<p><b>BLOCK D SUMMARY: Sum of the total number of questions answered yes in BLOCK D:</b></p>
<p><b>40) Is the Sum of all YES answers in Block D 0 - 5?</b></p> <p>If the sum of the yes' is from 0 to 5, the score is 4.</p>
<p><b>41) Is the Sum of all YES answers in Block D 6 -10?</b></p> <p>If the sum of the yes' is from 6 to 10, the score is 8.</p>
<p><b>42) Is the Sum of all YES answers in Block D &gt; 11?</b></p> <p>If the sum of the yes' is greater than 11, the score is 14.</p>
<p><b>43) Will the work activity be performed in a Hazard Category 2/3 nuclear facility (defined in the Site SAR, Vol. 1, Ch. 4)?</b></p> <p>If performed in a Hazard Category 2/3 nuclear facility which has an AB, the score is 4.</p>
<p><b>44) Is this work activity authorized to be performed by the existing authorization basis (AB) documentation (Nuclear facility ABs or the Site SAR) or regulatory permits/authorizations?</b></p> <p>If not covered by an existing AB document the score is 4.</p>
<p><b>45) Is there a potential for this work activity to have an undesirable impact on, or in a Hazard Category 2/3 nuclear facility, its support systems, its authorization basis documentation requirements or controls or environmental impact?</b></p> <p>If the activity may have an undesirable impact on the facility, support system, or it's AB requirements, the score is 2.</p>

### APPENDIX 2.3 - ACTIVITY SCREENING FORM GUIDE

46) Is there a potential for this work activity to have an undesirable impact on a Site SAR requirement or control (see Appendix 2.4)?
If outside a nuclear facility authorization basis, perform the checklist to determine if the activity is exempt from having a nuclear safety screen performed for this activity. If it is exempt, there is no undesirable impact on a Site SAR requirement or control. If not, there is potential and the score is 2.
47) Has an analysis of the potential hazards of this work activity or other uncertainties been completed, including the identification of required controls, and has it been documented to support the safety basis or authorization basis for this work activity?
Have the hazards been analyzed, documented, and approved such as a Safety Analysis Report, Basis for Interim Operations, Basis for Operations, Unreviewed Safety Question Determination, Integrated Hazard Analysis, Job Hazard Analysis, etc. If the analysis has not been performed, the score is 4.
48) Can the combined effect of the hazards potentially create additional hazards (For example, incompatible chemicals, synergistic impacts)?
The activity and hazards need to be looked at in total to determine if there are any combined hazards. If so, the score is 4.
49) Can the combined effect of the hazards cause a potential conflict in the controls (For example, Radiological Work Permit requires glovebag for containment and criticality limits restrict how much liquid can accumulate in glovebag)?
The activity and hazard controls need to be evaluated as a whole to determine if the hazard controls may conflict and need resolution prior to performing the work. If they can then the score is 4.
<b>EXPERIENCE</b>
50) Have the majority of the personnel (project manager, planners, workers, safety professionals, support staff, etc.) proposed to perform this work activity previously performed <b>ALL</b> of this work activity at the Site or any other site within the past 36 months?
If all of the work has not been performed by the majority of the people within the last 3 years, then the score is 4.
51) Have the majority of the personnel (project manager, planners, workers, safety professionals, support staff, etc.) proposed to perform this work activity previously performed <b>PORTIONS</b> of this work activity at the Site or any other site within the past 36 months?
If portions of the work has not been performed by the majority of the people within the last 3 years, then the score is 8.
52) How many major tasks/activities are involved in this work activity (For example, install tap, drain tank, disposition liquid, install electrical distribution, site excavation, etc.)?
Low Complexity < 5 tasks, if so the score is 0 points. Medium Complexity 6 – 9 tasks, if so the score is 1 point. High Complexity > 10 tasks, if so the score is 2 points.
53) How many people are involved in actually performing this work activity (includes support people on scene at any given time or shift, does not include oversight)?
Low Complexity < 10 people, if so the score is 0 points. Medium Complexity 11 – 24 people, if so the score is 1 point. High Complexity > 25 people, if so the score is 2 points.
54) How many functional organizations provide support during the performance of this work activity (For example, process specialists, RCTs, IH, FI, NS, CRIT)?
Low Complexity < 4 organizations, if so the score is 0 points. Medium Complexity 5 – 9 organizations, if so the score is 1 point. High Complexity > 10 organizations, if so the score is 2 points.
55) How many subcontractors are directly involved in actually performing this work activity?
Low Complexity < 3 subcontractors, if so the score is 0 points. Medium Complexity 4 – 7 subcontractors, if so the score is 2 points. High Complexity > 8 subcontractors, if so the score is 4 points.
<b>SCORING</b>
<b>Add the total scores from lines 40 through 55 Check the Appropriate Box:</b>
If The Total Score is <b>0 to 15</b> , the level of planning required is <b>LOW</b> . If The Total Score is <b>16 to 40</b> , the level of planning required is <b>MEDIUM</b> . If The Total Score is <b>41 or greater</b> , the level of planning required is <b>HIGH</b> . If the total score is between 35 and 45, the RM <b>SHALL</b> obtain confirmation of the selected level from another RM. From this confirmation, the RM has the option to revise the selection. The RM has the final responsibility for selection of the work planning process; however, senior management may elect to upgrade the level of planning at their discretion.

**APPENDIX 2.4 - SITE SAR SCREENING FORM  
EXCLUSION FROM THE SES/USQD PROCESS**

Work Control Number: \_\_\_\_\_ Originator: \_\_\_\_\_  
Work Package Title: \_\_\_\_\_

This process is only for activities that are performed outside the Authorization Basis of a nuclear facility. If all of the following questions are checked NO, then, in accordance with USQD-RFP-99.1446-FEP, the activity does not require an SES/USQD review. Contact Nuclear Safety if you have any questions regarding completion of this form.

#	QUESTION	YES	NO
1.	Does the activity involve any portion of the Protection, Alarm, and Communication System, including LS/DW, Unity, Fire & Security Alarms, Central Alarm Station, Secondary Alarm Station, Fire Dispatch Center, Emergency Operations Center, Criticality Alarms or any supporting feature?		
2.	Does the activity involve any portion of the Site Propane System?		
3.	Does the activity involve transportation of nuclear or hazardous materials?		
4.	Does the activity inhibit emergency response capability?		
5.	Does the activity involve any portion of the following:		
	a) Site Domestic Water Supply System? The function and performance criteria for the Domestic Water System is the capability to provide fire suppression water upon demand for the length of time credited in the respective AB(s) and FHA(s).		
	b) Site Standby Power System serving Central Alarm Station, Emergency Operations Center, and Fire Dispatch Center?		
	c) Site Electric Power Systems?		
	d) Site Nitrogen Supply System?		
	e) Site Steam and Condensate System?		
	f) Site Natural Gas Systems?		

If only Question 5 is checked YES, then the activity does not require an SES/USQD review IF the following statement appears in the IWCP package with a signature by a responsible design engineer (this **may** be in the prerequisites):  
"This work activity does not change the function or performance of the system during or after the work activity."

Refer to USQD-RFP-99.1446-FEP, page 18, for definition of terms and discussion of function and performance requirements.

Check the applicable box:

- ☐ All no; Site SAR SES/USQD review not required.  
☐ Question 5 is yes, but the WP contains the engineer's statement and signature, then a Site SAR USQD review is not required.  
☐ Any question 1-4 answered yes or question 5 answered yes without the engineer's statement and signature, then a Site SAR SES/USQD review is required.

Responsible Manager (Name/Signature/Date) \_\_\_\_\_

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① DCF Originator: R. Mitchell J. Hains 6/7/00  
Print Sign Date

Organization: KH Engineering / IWCP

Phone/Pager/Location: 5880 / 1 B130, C124

② (Authorizes processing of request.)

Responsible J. Hains J. Hains 6/7/00  
Manager: Print Sign Date

Organization: KH Engineering / IWCP

Phone/Pager/Location: 3089 / 212-6441 B130 R240

③ Assigned SME: Mike Millard Mike Millard 6/7/00  
Print Sign Date

Organization: KH Engineering / IWCP

Phone/Pager/Location: 70201 / 1 B130 C212A

④ Integrated Work Control Program Manual  
Document Title

MAN-071-IWCP Chapter 3  
Existing Document Number and Revision

N/A  
New Document Number and Revision (if Applicable)

⑤ Type of Document

☐ Policy ☐ Mgt Directive ☒ Manual ☐ Procedure  
☐ Tech. Standard ☐ Instruction ☐ Job Aid ☐ Other

⑥ Type of Modification

☐ New ☒ Change  
☐ One Time Use Only ☒ Minor  
☐ Revision ☐ Major  
☐ Cancellation

⑧ Effective Date: 6/12/00 Expiration Date: N/A

⑨ Proposed Modification

- 1) Incorporate Lessons Learned SD-91-3766 into JHIT Question 1.
- 2) Clarify JHIT Question 1 to ensure hand tools is incorporated into job planning.

⑩ Justification

Price Action Corrective Action  
Price Action Corrective Action

⑪ Reviewing Organization	⑫ Signature or Name of Reviewer	⑬ Date	⑪ Reviewing Organization	⑫ Signature or Name of Reviewer	⑬ Date
	<u>N/A</u>				

⑭ (Completed to approve changes and cancellations only. New documents and revisions are approved by signature on the document cover page.)

Approval Authority: J. Hains J. Hains 6/7/00 6/7/00  
Print Name Sign Date



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## CHAPTER 3 - WORK PLANNING & HAZARD ANALYSIS PROCESS

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### 3.1 PURPOSE

This chapter provides the instructions for the three levels of work planning and for performing the JHIT and completing the JHA required for all three levels of work planning. The JHA process helps ensure compliance with the Site's infrastructure requirements including environmental protection. Additionally, this Chapter provides:

- Guidance for completing the JHA and providing safety control measure guidance for hazards identified in the JHIT checklist
- Instructions and guidelines for conducting a more detailed IHA for highly complex or hazardous projects/activities

### 3.2 SCOPE

This chapter describes the process for implementing each of the three levels of planning (Low, Medium, and High) for activities screened using the ASF. Similarly, the process and requirements for completing a job walkdown, a JHIT, and a JHA are described.

Three planning levels have been established to offer graded approaches to planning based on the anticipated hazards and complexity of the work activity. In particular, each of the planning levels includes varying degrees of the team-based approach to planning. Using this graded approach ensures that the appropriate experience and expertise are included in establishing the work scope, identifying the hazards and associated controls, ensuring that the methods for conducting the work are sound, and that input is received from team members throughout the planning process. See Appendix 3.1 for instructions in completing each planning level.

The JHIT and JHA are completed for all planning levels and are to be used to help the Planning Team understand the magnitude and intensity of the hazards involved in performing the work and to help determine the level of controls required to perform the work safely. The JHIT checklist is a very useful tool to help the planners and workers focus on the hazards associated with performing the work activity, to identify additional SME assistance needed in planning the work, and establishing the proper standards based hazard controls. In its most simple form, the planning team identifies the potential hazards associated with the work scope as part of a job walkdown and establishes the required controls to prevent or mitigate the hazards, and documents the hazards and controls on the JHA form, including safety controls that are identified elsewhere (e.g. RWP, NMSL, ALARA review, AB). Performing a JHA is an iterative process and **SHALL** be re-visited and updated during the planning phase until all controls are identified and during the execution phase if new hazards are discovered, or if the scope or safety controls are changed. For work activities where the work performance is subcontracted to an organization that is different from the organization doing the work planning, the JHIT/JHA and WCD **Should** be reviewed and updated as necessary by the individuals responsible for the work performance. In addition, the work team can review and update the JHA and WCD if either the safety or compliance controls are determined to be inadequate.

The JHA/IHA, along with the JHIT, **SHALL** be the only method by which hazards and safety controls for a particular job are analyzed and documented. Completing a JHA meets the requirements for completing other hazard analyses (e.g., Auditable Safety Analysis, Job Safety Analysis, Operational Safety Analysis).

The most complex or hazardous projects/activities require more thought and effort to identify and analyze the hazards that exist, and then to subsequently determine what controls are required. In those cases, a more detailed IHA is required. Appendix 3.7 provides instructions for conducting an IHA. Appendix 3.7 also provides a matrix of the various types of hazard assessment tools and techniques used at the Site that may be integrated into work planning.

### 3.3 GRADED WORK PLANNING PROCESS INSTRUCTIONS

Table 3-1 provides a matrix of the low, medium, and high planning process elements. This matrix provides an approach to planning that is graded to be commensurate with the types, levels, and uncertainties in the hazards profile, environmental risk and liability, the uncertainties surrounding the level of experience in the management team and project team, and the complexity and coordination that must be taken to ensure the work activity is performed safely.

The RM refers to Table 3-1 and executes the Planning Process Elements (marked with an "x") by the level of planning indicated. Appendices 3.1 – 3.7 provide additional guidance on how to execute the Planning Process Elements. The RMs are encouraged to expand the planning effort whenever it improves the quality of the planning. Consider the following key issues in performing activity planning for all levels of work planning:

- Ensuring the activity is adequately characterized
- Evaluating required elements for Low, Medium, and High levels of planning
- Identifying SMEs designated to analyze hazards and identify controls
- Determining methodology for performing hazards assessments
- Identifying and assessing the hazards
- Identifying controls to prevent or mitigate the hazards
- Developing and integrating the controls; ensuring all controls are identified in the JHA
- Promulgating the controls into work control documents
- Assessing feedback relative to work planning
- Determining regulatory impacts

Perform all IHA and work planning using a graded approach to address the following elements.

- The relative impact to safety and regulatory compliance
- The magnitude of any hazard involved
- The verified design basis documentation available

Ensure that the IHA and controls development provided in the planning process address:

- Work Activity Definition
- Characterization, Categorization, and Classification of Hazards
- Identification of Scenarios of Concern
- Evaluation of Consequences
- Hazard Mitigation/Identification of Controls
- Determination of the Acceptability of the Consequences
- Documentation of the Assessment

Ensure that the hazards assessments and work planning documents are maintained current and updated, as necessary, throughout the duration of the work activity. Ensure that the ASF and

JHA are re-performed when previously unidentified hazards are discovered or when change occurs in a facility disposition phase, work activity scope, or hazard. The hazard baseline is reevaluated to ensure that 1) new hazards or energy sources have not been introduced and 2) assumptions and commitments associated with the hazard baseline are still valid.

**Table 3-1, Matrix of Planning Process Elements - Graded to Level of Planning**

PLANNING PROCESS ELEMENT	Level of Planning (Graded Approach)		
	Low	Medium	High
Review Work Experience and Lessons Learned ( <i>previous jobs</i> )	X	X	X
Work Activity Purpose and Technical Scope / Statement of Work	X	X	X
Work Activity / Job Walkdown	X	X	X
Job Hazard Identification Tool (JHIT) – Appendix 3.2	X	X	X
Job Hazard Analysis (JHA) – Appendix 3.4	X	X	
Job Hazard Analysis (JHA) – Appendix 3.5			X
Environmental Checklist	X <sup>5</sup>	X <sup>5</sup>	X <sup>5</sup>
Develop Work Control Document(s) ( <i>Procedure, WP Type 1, 2, etc.</i> )	X	X	X
Nuclear Safety Evaluation ( <i>SES/USQD</i> )	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>
Independent Safety Review ( <i>PRC/ORC</i> )	X <sup>2</sup>	X <sup>2</sup>	X <sup>2</sup>
Readiness Determination ( <i>Management Review/Readiness Assessment/Operational Readiness Review</i> )	X <sup>3</sup>	X <sup>3</sup>	X <sup>3</sup>
ALARA Job and ALARA Design Reviews	X <sup>4</sup>	X <sup>4</sup>	X <sup>4</sup>
Project Management / Execution Plan ( <i>Includes WBS, schedule, project resources, budget, barriers &amp; constraints, etc.</i> ) – required only for projects.		X	X
Identify and Form Work Planning Team ( <i>Core Team and SMEs</i> )	X	X	X
Complete the Team Credential Report		X	X
Formal Post Job Review ( <i>Includes Feedback &amp; Lessons Learned – May be required for Low per Chapter 10</i> )		X	X
Work Activity / Hazard Characterization			X
Work Activity Flow Chart ( <i>Work Tasks and Subtasks</i> )			X
Work Activity Task / Subtask Descriptions			X
Work Activity Task / Subtask Expectations ( <i>Controls</i> )			X
Integrated Hazards Assessment (Appendix 3.7)			X
Work Activity / Job Specific Training			X
Mockups / Dry runs / Drills / Emergency Response as required			X

<sup>1</sup> – Refer to Nuclear Safety Manual, <sup>2</sup> – Refer to 1-5200-ADM-02.01, <sup>3</sup> – Refer to MAN-040-RDM, <sup>4</sup> – Refer to PRO-227-RSP-08.02, <sup>5</sup> – Refer to 1-25000-EPR-NEPA.001

### 3.4 PLANNING TEAM MAKEUP AND MEMBER QUALIFICATIONS

The makeup of the Planning Team is dependent upon the uncertainty of the work activity, the hazards and requirements expected to be encountered during the performance of the work, and the complexity of the work activity. The ASF provides the RM with the SMEs that **SHALL** be included as part of the Planning Team. Environmental **may** be an environmental and/or waste SME as appropriate for the work to be performed.

The RM generally selects a team of no less than two and typically no more than 12 people. These people have a combination of individual and collective experience and education so that they have expertise about the hazards of the work activity under consideration. The team can include members from contractors and subcontractors, including floor-level workers and SMEs where appropriate, and where such inclusion is required, to reach quality decisions about safety and hazard controls. The combination of expertise on the team has the capability to:

- Provide a detailed analysis of the hazards inherent in the work activity
- Use the appropriate level of work planning to establish an adequate set of controls for the safe performance of work
- Based on the hazards analyses, determine and define the controls in a way that can be communicated to those performing the work.

Depending on the rigor required for planning, the team may need to physically work together to take advantage of the synergism of the team; that is, the deliberations and decisions about hazards, analyses, and selection of controls take place while the team is together in one location.

Upon completion of the process, the team membership, deliberations, and decisions are documented and included in the work control document files. Instructions for completing the Planning Team Credentials Report (Medium & High Levels) are discussed in Section 3.4.3.

In any given project, there could be more than one team necessary to plan the work, based upon how the project is subdivided into activities.

#### **3.4.1 Work Planning Team Decision/Dissenting Opinions**

The following approaches **may** be used to reach a decision before and when a conflict arises:

- Define the criteria for team decision-making (i.e., a consensus decision, majority rule, etc.)
- When a conflict arises, individually and jointly define the problem. Lack of a defining process to resolve conflicts could result in the team not reaching agreement
- Discuss individual needs and goals, team needs and goals, and not positions
- Actively listen, be open-minded, flexible, and keep in mind individual & team needs/goals
- Keep other perspectives in mind. Don't place blame, but rather, look for mutual benefits
- Clarify differences, look for alternatives or options

Agreement can be reached if members are willing to work through the issues. However, in cases where agreement cannot be reached, the decision-making process and criteria should have established the mechanism to reach a decision. In the case of a dissenting opinion, the opinion is documented.

#### **3.4.2 Work Planning Team Roles and Responsibilities**

Some projects require multiple teams for specific or unique activities. In those cases where multiple teams are required, a single points of contact list should be identified to interface between teams, disseminate information, and to establish team hierarchy. For each team, the team's roles and responsibilities should be identified and documented to include the following:

- Identification of stakeholders
- Agreement on working schedules
- Management commitment to allow team members to participate
- Selection of team members for all aspects of the activity

- Priority of maintaining team continuity and minimizing team member turnovers
- Identification of training requirements/qualifications
- Identification of specific roles and responsibilities for each team member
- Identification of part-time SMEs for areas with weak coverage by full-time team member

### 3.4.3 Planning Team Credentials Report Instructions

For Medium and High Planning Levels, the Team Leader **SHALL**:

- Determine number of team positions and disciplines required for areas of expertise. This **SHALL** be based on the results from the Hazard Profile Screen from the ASF. Additional SMEs **SHALL** be added in accordance with the JHIT checklist, Appendix 3.2.
- Select team members and SMEs who have the required qualifications.
- Environmental **may** be an environmental and/or waste SME as appropriate for the work to be performed.
- Obtain permission from the managers of the individuals selected to utilize their services for a specific time period and percentage of time.
- List the activity title and work control number on the Planning Team Credentials Report Form.
- Document the following information on the Planning Team Credentials Report Form:
  - Name (printed)
  - Role and justification for being selected on team or other comments.
- Submit the Planning Team Credentials Report to the RM for review and approval. Resumes **may** be requested.
- Distribute completed and approved Planning Team Credentials Report to all team members and their managers, and include in the work document.

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## APPENDIX 3.1 - PLANNING LEVEL INSTRUCTIONS

This appendix provides guidance related to work planning approaches covering application of the ASF as it relates to selection of work planning levels.

### Graded Work Planning Approaches

There are three levels of work planning approaches that can be selected as result of the ASF screening: Low, Medium, and High. Specific knowledge for the following factors is considered when determining an appropriate level of work planning:

- Scope Definition
- Work Process Flow
- Nature of the Hazards
- Complexity/Coordination/Uncertainty

In general, the more uncertainty and hazard that exists about a work activity, the more rigor and analysis is required in the planning phase. Using the graded approach concept, a low-risk simple activity requires a low level of planning and could be planned with minimal participation by the SMEs, while a high-risk, complicated, or large activity requires a higher level of planning and would require more participation and commitment. In all cases the ASF and JHIT will indicate the required level of SME involvement.

Activities **Should** be characterized as completely as possible before performing the graded hazards assessment and planning in this chapter. Characterization of the activity is an essential element in the first function of the ISM systems, "Define the scope of work". Project Baseline Descriptions and Work Authorization Documents provide a level of description for activities and work being planned and budgeted for each fiscal year. However, the ASF requires that additional characterization information for a work activity be obtained and documented in order to develop the hazard profile and select the proper planning process. The type of characterization information that needs to be considered in work activity planning process includes the following:

- The purpose and type of the activity or work being performed
- The starting and ending points for the activity
- A description of the major work steps, phases, or elements
- Principal types of hazards directly involved with an activity or expected to be encountered
- Significant uncertainties that currently exist that could affect the performance of the activity
- The potential interfaces with other activities and/or concurrent activities in the same location
- History of the work activity performance, including historical records, process knowledge, etc.
- Environmental or regulatory impacts that may occur as the result of the work

Once the activity planning has been completed and the work control documents have been established, the workers and their supervisors are provided with the necessary documentation and management support such that work can be conducted safely. Feedback during conduct of work is used to prevent future incidents and improve the future work planning.

The ASF uses a preliminary qualitative hazard assessment approach to aid in the selection of the planning process. Once in the planning development phase, other qualitative, semi-quantitative, or quantitative hazard approaches will be identified by the team and applied as appropriate.

Table A3-1 provides an overview of typical work planning hazard assessment techniques as well as the products developed by those processes and examples of the planning and implementation tools.

## APPENDIX 3.1 - PLANNING LEVEL INSTRUCTIONS

**Table A3-1 - Work Planning Processes Products**

<b>Work Planning Process Approach</b>	<b>Hazard Assessment Technique</b>	<b>Example Planning Tools</b>	<b>Example Implementation Tools</b>
Site Procedure Development	Qualitative	JHAs, Procedures, Operations Orders	Procedures, Drawings, Instructional Job Aids
IWCP Approach	Semi-Qualitative to Qualitative, depending on Planning Level	JHAs, HASPs, ASAs, Work Packages, ALARA Reviews	Work Packages, EDPs, Procedures, ALARA Reviews
Nuclear Safety AB Development	Quantitative	AB Documents (SARs, Basis for Interim Operations, Basis for Operations)	Work Packages, Procedures
Environmental Checklist	Regulatory and Environmental Impact	Environmental Checklist	See <i>Implementation of NEPA Documentation</i>

### **Low Planning Level**

The low planning level work control process is applied when the scoring results from the ASF screen are 15 points or less. This level is usually applied when the activity hazards and complexity are low, regulatory requirements and environmental impact is minimal, and the work is either routine or simple and there is some experience performing most, if not all, of the work. A project management plan and a team-based approach are not normally required for this level of planning. The planning team members, as identified on the ASF, may have minimal commitment and input into the WCD, but are accountable for their approval of the JHIT/JHA and the WCD.

The activity purpose and scope can be simple statements and the project requirements (WBS and schedule) are usually small and straightforward. A JHIT checklist is required for even the simplest activities and is usually completed in parallel with the job walkdown. A task flow chart and detailed hazard analysis are not required. The controls are developed based on the JHIT (i.e., infrastructure standards based requirements) and then documented on the JHA, and are usually not much more than "skill-of-the-craft" with some specific precautions or routine controls identified (for example, lockout/tagout). The JHA integrates and documents the controls identified in other documents (e.g. RWP, NMSL, ALARA review, AB) and these controls are incorporated into the WCD.

No special reviews or assessments are usually required. The normal document review and approval process, including a nuclear safety evaluation, if required, is followed. An independent safety and/or environmental review and a readiness review/assessment could be required in some special cases based on regulatory requirements. The work activity is conducted using the infrastructure requirements in place, based on where the work is being performed. After the job is finished, closeout documentation is completed and submitted along with any feedback on the job. The results from this level of planning are documented (as required by the instructions).

#### **The RM SHALL:**

- Select, as a minimum, a work planner and a worker knowledgeable about the work to plan the work, and other SMEs as identified on the ASF
- Ensure that the controls, identified by the planning team are incorporated in the appropriate WCD

#### **The Planning Team SHALL:**

- Review the lessons learned from the Lessons Learned/Generic Implications (LL/GI) homepage on the Site intranet, perform a walkdown, and complete the JHIT. Based on the results of the JHIT, a JHA **SHALL** be completed in accordance with the JHA Guide.

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### APPENDIX 3.1 - PLANNING LEVEL INSTRUCTIONS

- Perform the low planning level approach, ensuring that the required low planning level elements are addressed. The JHIT/JHA and the WCD **SHALL** be updated/revised as needed during the work planning or execution if new hazards or controls are identified, or if the scope or hazard controls are changed, or if the work performance team is different (subcontracted) from the planning team.

#### **Medium Planning Level**

A medium planning level work control process is applied when the scoring results from the ASF screen are between 16 to 40 points. This level is usually applied when there are some significant hazards (or there is uncertainty about the hazards), moderate regulatory requirements or potential for environmental impact, the activity is somewhat complex, or the activity has not been performed by the project team at the Site. A project management plan and a team-based approach are required. The RM convenes a team composed of the appropriate SMEs (determined by ASF), planners, and floor level workers to identify and analyze the hazards, and then determine the controls necessary to safely perform the activity.

The medium planning level uses a team-based work planning approach to enhance the quality of the decisions and judgments regarding the analysis of the hazards and the controls required to perform the work safely. The planning team consists of core team members familiar with the activity and SMEs in specific technical, environmental, and safety disciplines. One of the first steps for the planning team is to review the governing requirements, work experience, and lessons learned. The activity purpose and scope are then defined in several sentences or a few paragraphs and the project requirements (WBS and schedule) are usually somewhat detailed. A JHIT checklist is required and is usually completed in parallel with the job walkdown. Detailed hazard identification and analysis are performed as needed and at the discretion of RM. The well-defined safety and compliance controls are developed based on the JHIT and is documented on the JHA including any controls identified in other documents (e.g. RWP, NMSL, ALARA review, AB). The need for additional controls is evaluated by testing the potential consequences against the proposed controls to determine if they are acceptable. The resultant integrated control set is graded to the level of hazards, the complexity of the work, and the uncertainty involved.

After the safety and compliance controls have been established, the work control documents are developed, which contain and implement the controls. The SME reviews are performed, as required by the JHIT. A nuclear safety evaluation is performed on the resultant work control documents, as directed by infrastructure procedures. In addition, an independent safety review and a readiness determination could be required based on infrastructure procedural requirements.

The work activity is conducted using the developed work control documents and infrastructure procedures in place based on where the work is being performed. After the job is finished, a formal PJR is conducted and then the closeout documentation is completed and submitted along with any feedback. The results from this level of planning are documented (as required).

The RM **SHALL**:

- Assign a Team Leader to form a Planning Team based on SMEs identified in the ASF, including a worker, and approve the membership of the team by signing the Planning Team Credentials Report
- Ensure that the controls identified in the JHA are incorporated in the proper WCD



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## APPENDIX 3.1 - PLANNING LEVEL INSTRUCTIONS

The Planning Team **SHALL**:

- Review the lessons learned from the Lessons Learned/Generic Implications (LL/GI) homepage on the Site intranet, perform a walkdown, and complete the JHIT. Based on the results of the JHIT, a JHA **SHALL** be completed in accordance with the JHA Guide.
- Perform the medium planning level approach, ensuring that the required medium planning level elements are addressed. The JHIT/JHA and the WCD **SHALL** be updated/revised as needed during the work planning or execution if new hazards or controls are identified, or if the scope or hazard controls are changed, or if the work performance team is different (subcontracted) from the planning team.

### High Planning Level

A high planning level work control process is applied when the scoring results from the ASF screen are 41 points or greater. This level is usually applied when there are significant regulatory requirements or environmental impact, hazards (or there is significant uncertainty about the hazards), and there is either significant complexity or the activity has never been performed by the project team at the Site. A project management plan and a team-based approach are required. Often, an activity requiring a high planning level will have multiple teams of individuals planning or working on individual components for the activity, e.g., AB documents, Environmental Assessments, HASPs, WPs, procedures, and training packages. The RM convenes a team composed of a team leader and the appropriate SMEs as identified in the ASF.

The high planning level uses a team-based work planning approach to enhance the quality of the decisions and judgments regarding the analysis of the hazards and to provide a "justification of adequacy" related to the controls chosen to ensure that the work is performed safely. The planning team consists of core team members familiar with the activity and SMEs in specific technical and safety disciplines. One of the first steps for the planning team is to review the work experience and lessons learned. The activity purpose and scope are then defined in several paragraphs and the project requirements (WBS and schedule) are usually very detailed.

A JHIT checklist is required for this level of planning and is usually completed in parallel with the job walkdown. A task flow chart, along with task descriptions are required to be developed, but are more detailed than that required for the medium planning level. Detailed hazard identification and analysis (nuclear and non-nuclear) is required and the planning team is responsible for choosing the applicable hazard analysis tools and techniques to fit the job. The well defined control set is developed based on the JHIT and the results from the consequence analysis and detailed hazard analysis, controls identified in other documents (e.g. RWP, NMSL, ALARA review, AB), and documented on the JHA (Appendix 3.5). The need for additional controls is evaluated by testing the potential consequences against the proposed controls to determine if they are acceptable. The resultant integrated control set is graded to the level of hazards, the complexity of the work, and the uncertainty involved.

After the safety and compliance controls have been established, the WCDs are developed, which contain and implement the controls. The SME reviews and validations are performed and documented, along with comment resolution. A nuclear safety evaluation, independent safety review and a readiness determination are performed as required by Site procedures.

The work activity is conducted using the developed WCDs and infrastructure procedures in place based on where the work is being performed. After the job is finished, formal PJR is conducted and then the close-out documentation is completed and submitted along with any feedback on the job. The job feedback and lessons learned are formally documented and submitted with the close-out documentation.

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### APPENDIX 3.1 - PLANNING LEVEL INSTRUCTIONS

The high planning level process is an iterative process that can require the team to go back and update planning tasks previously completed before the "final" integrated control set is completed (e.g., task flow chart, task descriptions, activity bounding conditions, specific task expectations, the hazards analysis). The results from this level of planning are formally documented (as required by the instructions).

#### The RM **SHALL**:

- Assign a Team Leader to form a Planning Team based on SMEs identified by the ASF, including a worker, and approve the membership of the team by signing the Planning Team Credentials Report
- Ensure that a JHA/IHA is performed
- Ensure that the controls identified in the JHA/IHA are incorporated in the proper work control documentation that are developed from Chapters 4 through 7

#### The Planning Team **SHALL**:

- Review the lessons learned from the Lessons Learned/Generic Implications (LL/GI) homepage on the Site intranet, perform a walkdown, and complete the JHIT. Based on the results of the JHIT, a JHA **SHALL** be completed in accordance with the JHA Guide.
- Perform the high planning level approach, ensuring that the required high planning level elements are addressed. The JHIT/JHA and the WCD **SHALL** be updated/revised as needed during the work planning or execution if new hazards or controls are identified, or if the scope or hazard controls are changed, or if the work performance team is different (subcontracted) from the planning team.

#### Flow Chart and Task Descriptions

The Planning Team **SHALL** develop a task flow chart for the activity being planned. List in sequential order on the High Planning Level JHA the major tasks required to perform the work. More than one page may be required to list all the sub-tasks associated with a particular high level task.

#### Subtasks Descriptions

#### The Planning Team **SHALL**:

- List in sequence the first level subtasks required to perform the work, keeping in mind that the first level subtasks could require a second level of subtasks below them to adequately describe performance of the work. The objective of rendering the work flow into subtasks is to understand the components of the work in enough detail that the team can be assured that they understand the hazards associated with performing the work.
- List, in sequence, the second level subtasks required to perform the work. Not all level one sub-tasks will require second level sub-tasks. The choice of whether second level subtasks are required or not depends on the team's judgment about the detail required to define the work flow so that the team can be assured that they understand the hazards associated with performing the work.

**NOTE:** *Each first level subtask has a number that consists of the major task number, the sequence number for the first level subtask, and a sequence number for the second level subtask, if any. For example, second level subtask number 3 of first level subtask number 2 of major task number 1 has a number that is 1.2.3.*

- Describe the tasks in sufficient detail that a person having a general knowledge of the scope of work could understand the steps being performed. Use continuation pages as required.

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## APPENDIX 3.1 - PLANNING LEVEL INSTRUCTIONS

### Hazard Identification

The Planning Team **SHALL**:

- Review the results from the Hazard Profile Screen from the ASF (Block D-Screen 2) completed as part of the ASF procedure, as a starting point for identifying all the hazards for the activity.
- Use the JHIT to initiate identification of the hazards associated with each first and second level task and document the results on the High Planning Level JHA. The Team then decides if this is sufficient. If not, the team conducts an IHA, graded to the activity, and updates the JHA as needed. Appendix 3.7 provides guidance and instruction on conducting an IHA.
- This step frequently must be repeated after conducting hazards analyses or assessments, or after any other activity that discloses additional hazards. The JHA **Should** be revised as frequently as necessary to reflect the best knowledge of the hazards associated with each task.

### Hazard Analysis/Assessment

The Planning Team **SHALL**:

- Perform a hazard analysis/assessment for each step listed in the JHA, considering both normal and reasonably anticipated abnormal events and the following criteria:
  - Graded approach commensurate with the level of risk, hazard and consequence of the task(s)
  - Any pre-existing hazards analyses or safety analyses pertinent to the work under consideration (e.g.; AB, Health and Safety Plan, Nuclear Safety Analyses, Auditable Safety Analyses)
  - Specific to the task(s) of concern
  - Ensure all hazards on the JHIT are addressed in the JHA
- Record the results of the hazards assessment/analyses on the JHA.
- Identify initiating events and potential mitigating systems failures ("what-if" scenarios) that could cause the hazard to produce undesirable consequences. Use team processes involving the whole team (e.g.; brainstorming) to optimize the determination of an adequate hazard evaluation.
- Some of the scenarios determined by the "what-if" technique could require extensive and complex analyses to determine the consequences and required controls (e.g., nuclear safety analyses, criticality safety analyses, chemical safety thresholds). The Planning Team determines when this is necessary and engages the appropriate qualified personnel to perform these analyses.

### Control Set Identification

The Team determines the proper controls from their analyses and circumstances of performing the task. The Planning Team **SHALL** record on the JHA the control(s) for the hazard associated with each particular task from the hazard analysis.

### Planning Document Preparation, Review and Approval

- After completing the JHA, the planning team prepares a planning document that contains the results from all the steps performed for the high planning level approach (includes scope description, JHA, Planning Team Credentials Report). The planning document is reviewed and signed by the entire planning team and additional SMEs (if used).
- The RM reviews the final planning document and indicates approval by signing.

APPENDIX 3.2 - JOB HAZARD IDENTIFICATION TOOL (JHIT)

WCF No.:		Title/Description:										Date:				
Specific Work Location:							SAFETY SME INVOLVEMENT									
		Yes	No	P	T	M	H&S	ENG	RAD	Qual.	CRIT	NS	ENV	FP		
1	Are electrical, mechanical, hydraulic, or chemical energy sources, including power hand tools, going to be used to repair or service the item, or could workers be placed at risk of contacting hazardous energy sources?			X	X		C G									
2	Will work be done on an energized electric circuit?			X	X		C									
3	Does the task involve work in a confined space or an area that is a suspected confined space?			X	X		R							R		
4	Is the work activity likely to result in an inhalation or dermal exposure to dust, mists, vapors, gases, or fumes that may require the use of a respirator or protective clothing?				X	X	R									
5	Does the activity require the use of chemicals, or are chemicals present in the work area or to be brought into the area? If "NO", then proceed to question #6.				X		C						R			
5a	Could the worker's eyes or skin be exposed to toxic or corrosive chemicals?				X		C						C			
5b	Will the activity result in the generation of waste chemicals?				X		C						R			
6	Is the area posted as a high noise area or will the work activities result in an uncharacterized noise exposure?				X	X	C G									
7	Could workers be exposed to environments that may be immediately dangerous to life and health or chemicals for which air purifying respiratory protection is inadequate (e.g., methylene chloride, nitric acid, carbon monoxide, carbon dioxide, or oxygen deficient atmospheres)?				X		R									
8	Will asbestos containing material or potential asbestos containing material be disturbed?			X	X	X	R			G			R			
9	Will worker be exposed to falling objects (e.g., construction area)?						C									
10	Are compressed gas cylinders or systems to be used?				X		C						R			
11	Are pressure vessels, systems and relief devices included in the work scope, or is there exposure to pressurized vessels other than gas cylinders in the vicinity of the work area that are not protected by compliant pressure devices?				X		C	C								
12	Is work to include movement of material, tools, or equipment? If "NO", then proceed to question #13.															
12a	Is hoisting and rigging equipment to be used?			X	X	X	C	C		G						
12b	Is a powered industrial truck (forklift) to be used?			X	X	X	C	C		G						
12c	Will rollers (multi-tons), lift tables, jacks, or other material movement accessories be used?						C	C								

P = Checklist or Permit Required / T = Training Required / M = Medical Monitoring; R = Required SME Involvement & Work Document Concurrence. G = If required by JHIT Guide, or if determined by planning team. C = SME Contacted & Involved in JHIT Development w/o mandatory JHIT or work control document concurrence.

APPENDIX 3.2 - JOB HAZARD IDENTIFICATION TOOL (JHIT)

WCF No.		SME INVOLVEMENT													
		Yes	No	P	T	M	H&S	ENG	RAD	Qual.	CRIT	NS	ENV	FP	
13	Is spark, flame, or heat producing work, to include welding, cutting and/or brazing to occur outside a NS/FP pre-approved designated welding area? <b>If "NO", then proceed to question #14.</b>			X	X		C	C		G	G			C	
13a	If welding, cutting or brazing is to be performed, is the material to be worked on contaminated with either fixed or removable radioactive material, <u>or</u> does the work surface or area have a radiological history?			X	X		C		R		G				
13b	Is spark, flame, or heat producing work, to include welding, cutting, and/or brazing, to occur in a nuclear facility, other than in a NS/FP pre-approved designated welding area (e.g., machine shop)?			X			C		C		G	C		C	
14	Is there a beryllium exposure hazard <ul style="list-style-type: none"> <li>Is beryllium to be handled,</li> <li>Are surfaces in the work area beryllium contaminated or suspected to be beryllium contaminated,</li> <li>Will equipment (including process systems) be worked on that are suspected of being beryllium contaminated,</li> <li>Will workers enter a beryllium operations area or a limited access beryllium operations area,</li> <li>Or is there a potential beryllium inhalation exposure during the work activities?</li> </ul>			X	X	X	R			C			C		
15	Is work to be performed on domestic (potable) water lines?									G			R		
16	Are lead, lead containing products, or painted surfaces being cut, scraped, recycled, sanded or melted?				X	X	R						R		
17	Is work to be performed on batteries?				X		C						C		
18	Are explosives to be handled?				X		R				G	C	R	C	
19	Does the activity involve maintenance of a ventilation system or ducting where a fume hood or glovebox was vented and the potential for an explosion may exist due to residual perchlorates?				X		R						R	C	
20	Will an established and marked exit or egress route be blocked, rerouted, or changed while work is being performed?			X			C							R	
21	Will the activity involve elevated work? <b>If "NO", then proceed to question #22.</b>														
21a	Will ladders be used for this work?				X		C								
21b	Is scaffolding required?			X	X		C								
21c	Is fall protection required?				X		C								

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APPENDIX 3.2 - JOB HAZARD IDENTIFICATION TOOL (JHIT)

WCF No.		Yes	No	P	T	M	SME INVOLVEMENT							
							H&S	ENG	RAD	Qual.	CRIT	NS	ENV	FP
21d	Is an aerial work platform to be used?			X	X	X	C							
21e	Is the work being performed on a roof?				X		C							
22	Are pinching hazards and/or sharp edges present?						C							
23	Are ergonomic hazards present? (i.e., does the activity involve a combination of the following; working in awkward postures, repetitive motion, and/or the use of force to complete the task)?						R							
24	Does this activity involve areas where temperature or humidity extremes exist or there will be changes in ventilation that could affect human habitability?						R		G					
25	Will the activity involve any penetrations into or through, walls, ceilings (including ceiling tile removal), floors, slabs, or pads or demolition of any of these? <b>If "NO", then proceed to question #26.</b>						C	R		G		G	C	G
25a	Is the material being penetrated in a radiologically posted area or will the penetration protrude into a radiologically controlled area?			X	X				R				C	
25b	Is there record, evidence or suspicion that the material being penetrated could have come in contact with radioactive material?			X	X				R					
25c	Has the surface of the material being penetrated been treated in any way such that absorbed contamination could be hidden (e.g., painted, scabbled, or other decon efforts)?			X	X				R				C	
25d	Will the activity involve any penetrations into a Material Access Area?								R			C		
25e	Will the activity involve penetrating or cutting a hole through the tertiary confinement of a nuclear building?											R		G
26	Does this activity involve a configuration change/modification?							R	G	G	G	G		
26a	Does this activity add equipment that could generate substantial heat, noise, or vibration?						C	R						
26b	Does this activity add equipment or systems that could bring in large amounts of flammable or potentially asphyxiant gasses (i.e., propane, Ar, He, H <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub> , etc.) or venting of significant quantity of such gasses inside of buildings?						R	R						
26c	Does this activity involve structural modifications to buildings, substantial change in floor loading, drilling in pre-cast beams, cutting a significant number of re-bar, supporting or removing large loads, or moving heavy equipment?							R						
27	Does the activity involve movement, interaction or removal of fissile material?				X		C		R		R	C		
28	Are flammable/explosive gases involved in or required for the work in a nuclear facility, other than in an approved area (e.g., maintenance shop)?						C		R			C	C	R

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WCF No.:		Yes	No	P	T	M	SME INVOLVEMENT									
							H&S	ENG	RAD	Qual.	CRIT	NS	ENV	FP		
29	Is the work activity occurring within a building, structure, or area that currently has or previously had radioactive material? <b>If "NO", then proceed to question #30.</b>															
29a	Is the work being conducted in a posted Radiation Area, High Radiation Area or Very High Radiation Area?			X	X				R							
29b	Is the work conducted in a posted Contamination Area?			X	X				C							
29c	Is the work being conducted in a posted High Contamination Area?			X	X				R							
29d	Is the work conducted in a posted airborne radioactivity area?			X	X				R				C			
29e	Has the area ever been designated as a radiological area?			X	X				C				C			
29f	Does the area's history indicate a past presence of radioactive materials or operations?			X	X				R							
29g	Is there a potential for the activity to release radioactive material to the air through mechanical, chemical or other means?			X					R				R			
29h	Does the area contain, or is it bounded by any radiological postings, barriers, signs or labels?			X	X				R							
29i	Will the activity involve the transfer, pumping, or draining of radioactive or radioactively contaminated liquids?			X					R		C		C			
29j	Does the work activity involve equipment containing a sealed radioactive source or on equipment capable of generating radiation?			X	X				R							
29k	Does the work involve penetration into systems, or surfaces containing or suspected of containing radioactive materials or contamination?			X	X				R		C					
29l	Does the work involve removal or addition of shielding?								R		C					
29m	Does the activity involve removal of equipment, ducts, piping, gloveboxes, plenums or tanks from a radioactive area?			X	X		C		R		R	C	R			
30	Does the activity involve the use of "NEW" processes, equipment or tools used in the work process? <b>If "NO", then proceed to question #31.</b>															
30a	Will this new tool, process or equipment be used for radioactive materials?			X	X			R	R		R	C				
30b	Does the user of this new tool, process, or equipment require additional training?				X			R								
31	Will this activity be conducted outside of a building? <b>If "NO", then proceed to question #32.</b>															
31a	Is the work being conducted in a soil contamination area?								R				C			
31b	Will the work involve excavation in an area adjacent to an under-building contamination area?								R				C			

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WCF No.:		Yes	No	P	T	M	SME INVOLVEMENT							
							H&S	ENG	RAD	Qual.	CRIT	NS	ENV	FP
31c	Does the activity involve soil probing or well installation?								R				C	
31d	Will this activity involve excavations, trenching, drilling, geoprobe sampling or any other disturbances of ground (soil, pavement, etc.) to occur?			X	X	X	R	R	R	G			R	
31e	Will the activity disturb an Individual Hazardous Substance Site and result in potential worker exposure to hazardous substances?				X	X	R		C				R	
32	Is there a potential for pyrophoric material to be handled, processed, or encountered during the work activity, including generation, transfer or storage of any plutonium metals, solutions, residues, or salts that are within the scope of HSP 31.11?						C		R		R	R	C	R
33	Will there be a new air emission or a change in the quantity of an existing air emission to the atmosphere (including radionuclide National Emission Standard for Hazardous Air Pollutants)?			X									R	
34	Is this work activity being conducted in accordance with a Decommissioning Operations Plan, a Proposed Action Memorandum, an Interim Measures/Interim Remedial Action document, consent orders, Federal Facility Compliance Agreements, or other CERCLA decision document under the Rocky Flats Cleanup Agreement (RFCA)?						R						R	
35	Will this activity install, modify, move, or impact an Underground or Aboveground Storage Tank?				X		R	C	C				R	
36	Will this activity modify a current RCRA-regulated hazardous waste unit, relocate all or part of a unit, or otherwise impact a unit?				X		R						R	
37	Does the activity include closure of a RCRA hazardous waste unit or placing it in a RCRA stable configuration?				X		R						R	
38	Will this activity generate waste? <b>If "NO", then proceed to question #39.</b>													
38a	Will this activity generate polychlorinated biphenyl (PCB) ballasts or other Toxic Substance Control Act governed waste types, including PCB bulk product or bulk waste?				X		C						C	
38b	Will this activity generate a liquid sanitary waste (non-radioactive, non-hazardous aqueous waste)?				X		C						R	
38c	Will this activity generate solid sanitary waste, which falls into the category of "special sanitary wastes"?				X		C						R	
38d	Will this activity generate solid sanitary waste (excluding prohibited items)?				X		C		C				R	
38e	Will this activity generate hazardous, radioactive, or mixed waste?				X		C		R				R	

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WCF No.:		Yes	No	P	T	M	SME INVOLVEMENT							
							H&S	ENG	RAD	Qual.	CRIT	NS	ENV	FP
39	Is the work being conducted in an area covered by a Criticality Accident Alarm System that has been determined to not meet Life Safety / Disaster Warning (LS/DW) system audibility criteria or that has not been tested for LS/DW audibility and Criticality Accident Alarm System beacons are not visible from or within the affected area?						C				C	R		
40	Does this activity impact other facilities outside of the facility where the work is being performed (i.e.: work on the LS/DW radio feed affects other buildings required to broadcast music)?						G	G	G	G	G	G	G	G
41	Will the proposed work involve liquid of any types in areas which currently or formerly had fissile solutions?										C			
42	Work with reactive, shock sensitive, explosive (e.g., natural gas, hydrogen, propane) or incompatible chemicals or materials, including decomposition and radiolysis byproducts?						R	G					G	C
43	Do any Standing Orders, Operations Orders, or company/facility specific directives/instructions containing additional health and safety requirements apply to the work activity?						G	G	G	G	G	G	G	G
44	Does this activity involve any other hazards not previously identified or could this activity introduce any new hazards?						G	G	G	G	G	G	G	G

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#### INSTRUCTIONS

**NOTE:** *The Work Planner acts as the Team Leader for those activities performed using the "low" planning level.*

**NOTE:** *Every effort should be made to involve the floor-level worker who will be performing the work activity with the JHA development.*

**NOTE:** *The JHIT/JHA Guide in this appendix is used to assist in identifying the safety control measures for the identified hazards.*

The RM **SHALL** establish the planning team. This is based on the ASF results and the instructions for the level of planning outlined in Chapter 3. Environmental **may** be an environmental and/or waste SME as appropriate.

**NOTE:** *It is important for the Planning Team to have a thorough understanding of the job scope prior to performing the Hazard Analysis process. This will help the team identify the hazards associated with the work, along with the work steps and methods for controlling the hazards.*

The Planning Team **SHALL**:

- Perform a walkdown of the job site to identify all hazards present, along with the expected hazards based on the work scope. Any additional SMEs identified on the JHIT checklist as "Required" with the corresponding hazard **SHALL** also be members of the planning team.
- Complete the JHIT checklist by answering all (not sub-questions if the header question is answered "NO") of the questions either YES or NO depending on the hazards present.
- Complete the worksheet portion of the JHA, Appendix 3.4 (Low/Medium) or Appendix 3.5 (High). The hazard controls developed **SHALL** address the needed safety controls, permits, training, and medical monitoring requirements identified in the JHIT Guide. The JHA **SHALL** document the controls identified in other documents (e.g. RWP, NMSL, ALARA review, AB), and any other applicable requirements discussed here. These documents **SHALL** have the controls identified and developed prior to approving the JHA.
  - Identify the job specific training necessary to ensure workers are competent to perform the job being planned. Training may consist of regulatory courses, specific job processes and equipment, and skill of craft competencies.

Upon completion of the JHA, all members of the Planning Team **SHALL** enter their printed name, signature, and date in the space provided.

The RM **SHALL** approve the JHA by signing the JHA in the space provided.

The JHIT and JHA are important regulatory compliance and accident prevention tools that work by finding hazards and eliminating or minimizing them before the job is performed through identified controls, and before they have a chance to become accidents. Use the JHA to inform employees of specific job hazards and protective measures/required controls. The protective measures/required controls are subsequently incorporated into the WCD. In general, the information in this Appendix is guidance; however the use of **SHALL** in this appendix denotes a requirement. Additionally, the "guidance" provided in this appendix may refer to other documents which contain other programmatic requirements. Lessons Learned that may be applicable to each question have been identified by the Lessons Learned number, the source document number and name and **Should** be reviewed for applicability to the activity being planned.

Before filling out the JHA, consider the following: The purpose of the job - What has to be done? Who has to do it? The activities involved - How are they done? When are they done? Where are they done? In summary, to complete this form you should consider the purpose of the job, the activities it involves, and hazards it presents and the controls needed to eliminate or minimize those hazards.

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SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	REQUIRED CONTROLS
<p>Examining a specific job by breaking it down into a series of steps or tasks will enable you to discover potential hazards employees may encounter.</p> <p>Each job or operation will consist of a set of steps or tasks. For example, the job might be to move a box from a conveyor in the receiving area to a shelf in the storage area. To determine where a step begins or ends, look for a change of activity, change in direction or movement.</p> <p>Picking up the box from the conveyor and placing it on a hand truck is one step. The next step might be to push the loaded hand truck to the storage area (a change in activity). Moving the boxes from the truck and placing them on the shelf is another step. The final step might be returning the hand truck to the receiving area.</p> <p>List <i>all</i> the steps needed to perform the job. Some steps may not be performed each time; an example could be checking the casters on the hand truck. However, if that step is generally part of the job, it should be listed.</p>	<p>A hazard is a potential danger. The purpose of the analysis is to identify ALL hazards - both those produced by the environment or conditions and those connected with the job procedure. Include potential hazards identified in other documents (e.g. RWP, NMSL, ALARA review, AB). Close observation and knowledge of the job are important. Compiling an accurate and complete list of potential hazards will allow for the development of safe job procedures needed to prevent accidents.</p> <p>To identify hazards, complete the JHIT Checklist and ask yourself these basic questions about each step:</p> <ul style="list-style-type: none"> <li>• Is there a danger of the employee striking against, being struck by, or otherwise making injurious contact with an object?</li> <li>• Can the employee be caught in or between objects?</li> <li>• Is there potential for slipping, tripping, or falling?</li> <li>• Could the employee suffer strains from pushing, pulling, lifting, bending, or twisting?</li> <li>• Is the environment hazardous to safety and/or health (toxic gas, vapor, mist, fumes, dust, heat, or radiation)?</li> <li>• Is there potential for environmental release or spill?</li> <li>• Is there potential for regulatory compliance, permit, or agency agreement impact?</li> <li>• Is there potential for regulatory noncompliance or issues regarding issued consent orders or agency agreements?</li> <li>• Is there potential to pose environmental harm or damage?</li> <li>• Review Lessons Learned from similar jobs to determine if the same hazard may be present.</li> </ul>	<p>Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the hazards that could lead to an accident, injury, or occupational illness or environmental impact.</p> <p>Begin by trying to: 1) engineer the hazard out; 2) provide guards, safety devices, etc.; 3) provide personal protective equipment; 4) provide job instruction training; 5) maintain good housekeeping; 6) ensure good ergonomics (positioning the person in relation to the machine or other elements in such a way as to improve safety).</p> <p>List the recommended safe operating procedures. Begin with an action word. Say exactly what needs to be done to correct the hazard, such as, "lift using your leg muscles." Avoid general statements such as, "be careful."</p> <p>List the required or recommended personal protective equipment necessary to perform each step of the job.</p> <p>List the required training (i.e., regulatory, job specific, skill of craft competencies).</p> <p>List required permit modification or other action to be taken to mitigate environmental impact.</p> <p>Give a recommended action or procedure for each hazard.</p> <p>Serious hazards should be corrected immediately. The analysis should then be changed to reflect the new conditions.</p> <p>List the required controls identified in other documents (e.g. RWP, NMSL, ALARA review, AB)</p> <p>Finally, review the input on all three columns for accuracy and completeness. Determine if the recommended actions or procedures have been put in place. Re-evaluate the JHA as necessary.</p>

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QUESTION	CONTROL MEASURE GUIDANCE
1	<p>Are electrical, mechanical, hydraulic, or chemical energy sources, including power hand tools, going to be used to repair or service the item, or could workers be placed at risk of contacting hazardous energy sources?</p> <p><b>Checklist / Permit:</b> LO/TO Permit (if required)  <b>Additional Training:</b> Lockout/Tagout required for LO/TO Managers, Operations Managers, System Managers, Supervisors, Foremen, LO/TO Isolators and Verifiers. Lockout/Tagout Worker Workshop required for workers and subcontractors. Electrical Safety for Non-Electrical Workers or personnel who are at risk of electrical shock, as identified in MAN-072-OS&amp;IH PM, Chapter 36, <i>Electrical Safety Program</i>.  <b>References:</b> MAN-072-OS&amp;IH PM Chapter 9, <i>Lockout/Tagout</i>, Standing Order 23, <i>Operation of Steam and Condensate Systems</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Evaluate methods to de-energize the source of hazardous energy, complete the LO/TO permit (if required), follow all requirements to ensure the system is de-energized, and install LO/TO per the effective procedure. Ensure the process is in place to re-energize the system safely prior to removing the LO/TO. Refer to Standing Order 23 if the work involves steam and/or condensate systems. Contact H&amp;S for guidance if necessary. H&amp;S involvement is required for High Planning Level activities.  <b>Lessons Learned:</b> 2-4, SD-99-0339 Condensate induced water hammer; 6-6, SD-99-1918 Lockout/Tagout procedural violations (geared to pre-ev); 6-10, SD-99-1934 Inattention to detail = near miss; 11-13, SD-99-3766, Good Work Practice or Control Measure?</p>
2	<p>Will work be done on an energized electric circuit?</p> <p><b>Checklist / Permit:</b> Energized Electrical Work Permit must be completed.  <b>Additional Training:</b> Electrical Safety – CPR Qualification required for Electrical Workers when applicable. Electrical Safety for Electrical Workers. Electrical Safety for Non-Electrical Workers for personnel who are at risk of electrical shock, as identified in MAN-072-OS&amp;IH PM, Chapter 36, <i>Electrical Safety Program</i>. Workers will have verifiable electrical craft competencies.  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 36, <i>Electrical Safety Program</i>, MAN-072-OS&amp;IH PM Chapter 9, <i>Lockout/Tagout</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Employees, including electricians, welders, and their supervisors whose work brings them close enough to exposed parts of energized electrical circuits (operating at 50V or more to ground for a hazard to exist), <b>SHALL</b> be familiar with safety-related work practices. Electric Circuit - the loop of current-carrying conductors from a source of voltage to a load and back to the same source of voltage. The circuit should be de-energized and LO/TO applied per the effective procedure. If the circuit must be worked energized, an Energized Electrical Work Permit must be completed.  <b>Lessons Learned:</b> 10-7, SD-99-3362 Employee receives electrical shock while modifying office cubicle wall partitions 3-12, SD-98-0771 Wireman conducted work in energized breaker panel with 480 and 208 volts AC</p>
3	<p>Does the task involve work in a confined space or an area that is a suspected confined space?</p> <p><b>Checklist / Permit:</b> Confined Space Entry Permit must be completed.  <b>Additional Training:</b> Confined Space Entry Safety Awareness for personnel who work in confined spaces.  <b>References:</b> MAN-072-OS&amp;IH PM Chapter 21, <i>Confined Space Entry Program</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Evaluate each potential space as a confined space (based on the definition below) if work activities are being performed. Normally occupied rooms and areas of general occupancy do not have to be evaluated, however spaces or areas that have not been occupied for a large period of time and have been isolated should be evaluated. If a question arises consult an H&amp;S professional for interpretation. K-H Safety and Health will maintain a database identifying known confined spaces at the Site.  A confined space is defined as a space that: <ul style="list-style-type: none"> <li>Is large enough and so configured that an employee can bodily enter and perform work; and</li> <li>Has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, valve-vaults, and pits); and</li> <li>Is not designed for continuous employee occupancy.</li> </ul> A confined space may be posted as a permit required confined space or a non-permit confined space. A permit-required confined space requires air sampling by H&amp;S and Fire Department approval of the emergency retrieval system prior to entry. When working in a confined space it should be noted that LS/DW audibility may not have been verified during routine LS/DW tests. Therefore, personnel working in confined spaces <b>SHALL</b> ensure that adequate communications have been established or the applicable AB compensatory actions have been taken.  <b>Lessons Learned:</b></p>

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<b>4</b>	<b>Is the work activity likely to result in inhalation or dermal exposure to dust, mists, vapors, gases, or fumes that may require the use of a respirator or protective clothing?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Training for hazard communication and respiratory protection may be necessary in addition to compound specific training (lead, asbestos, or beryllium).  <b>References:</b> MAN-072-OS&amp;IH PM  <b>Medical Monitoring:</b> May be required depending upon the contaminant of concern.  <b>Process Guidance:</b> Contact your company H&amp;S representative to assist in the analysis of exposure and to determine the appropriate controls. Engineering and/or administrative controls <b>SHALL</b> be the first choice to control potential employee exposures. If engineering or administrative controls are not feasible, respiratory protection and/or protective clothing <b>SHALL</b> be selected in accordance with the above references.  <b>Lessons Learned:</b> 9-16, SD-99-3284 Inspection works (defective Level B suits); 9-15, SD-98-3360 Working in "automatic"</p>	
<b>5</b>	<b>Does the activity require the use of chemicals or are chemicals present in the work area, or to be brought into the area? If "NO", then proceed to question #6.</b>
<p><b>Checklist / Permit:</b> Environmental Checklist, Chemical Management Consent Order  <b>Additional Training:</b> Hazard Communications.  <b>References:</b> MAN-072-OS&amp;IH PM Chapter 22, <i>Hazard Communication Program</i>, 29 CFR 1910.120, and Chemical Management Manual, I-MAN-019-CMM-001  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> A chemical is any compound, mixture or element that requires a Material Safety Data Sheet (MSDS) according to OS&amp;IH PM Chapter 22 and 29 CFR 1910.120 and as defined by the Sites Chemical Management Manual. Chemicals are generally industrial chemical products, which have the potential for causing occupational exposures. As a general rule, properly stored and maintained chemicals do not pose a problem. Materials brought into an area for a specific task may present a problem due to incompatibility with chemicals already present. An MSDS must be readily available for any chemical, which will be used during the activity. If chemicals are to be brought into the area, review the MSDS for these chemicals. If chemicals are present in the area, discuss with the Chemical Control Administrator or H&amp;S any precautions that may be necessary because of the new chemicals being introduced into the area. All chemicals are to be procured through the chemical dispensary. Chemicals ordered or intended for use during the activity must have a bar-code, must be on the Integrated Chemical Tracking System, and must be tracked from the start of the activity to the close of the activity per the requirements of the Chemical Management Manual. Every effort should be made to use non-hazardous chemicals or chemicals which will result in waste not considered RCRA regulated hazardous waste.  <b>Lessons Learned:</b> 10-6, SD-99-3317 Inappropriate chemical storage; 6-18, SD-99-2089 What changed (toluene); 4-13, SD-99-1293 Chemical exposure</p>	
<b>5a</b>	<b>Will the worker's eyes or skin potentially be exposed to toxic or corrosive chemicals?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Hazard Communications.  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 29, <i>Eye &amp; Face Protection</i>, and Chapter 32, <i>Emergency Shower and Eyewash Protection</i>.  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Eye protection will be required based on the following criteria:</p> <ul style="list-style-type: none"> <li>• Class I Eye Protection - Safety glasses with side shields for protection against impact particles (e.g., saw dust from a cut off saw) or innocuous mists (water over spray from dish washer rinsing).</li> <li>• Class II Eye Protection - Safety glasses with a full-face shield for protection against impact particles, e.g. grinding wheel particles.</li> <li>• Class III Eye Protection - Chemical goggles and a full-face shield for protection against chemical dusts, liquids, and gasses.</li> <li>• Class IV Eye Protection - Special work protection as require in welding and laser operations.</li> </ul> <p>All eye protection must conform to ANSI Z87. Personal protective equipment (PPE) will be provided and selected based upon the ability to protect against the hazardous or toxic material. Careful evaluation of latex products should be included to prevent occurrence of latex allergy reactions. Showers and eyewashes <b>SHALL</b> be provided where potential injurious materials, such as corrosives, acids, oxidizers, reactants, and volatiles, are handled, used or dispensed. They are to be within 100 feet traveling distance from the hazard except for battery charging stations where the traveling distance is reduced to 25 feet.  <b>Lessons Learned:</b> 3-9, SD-99-0903 Laser eye burn; 10-11, SD-99-3397 Acid spray causes 1<sup>ST</sup> and 2<sup>ND</sup> degree burns</p>	

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<b>5b</b>	<b>Will the activity result in the generation of waste chemicals?</b>
<p><b>Checklist / Permit:</b> RCRA Permit/Environmental Compliance Checklist  <b>Additional Training:</b> Hazard Communications. Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications.  <b>References:</b> Chemical Management Manual  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> A waste chemical is an unused substance previously used in mission processes or maintenance activities which is no longer required by the owner to support current operations (e.g., has no future intended use) and has been declared a waste by the owner (e.g., waste paint or epoxy). All RCRA waste chemicals must be managed in compliance with regulatory and permit requirements. All unused waste chemicals should be returned to the chemical dispensary for compliant disposition. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.  <b>Lessons Learned:</b> 10-4, SD-99-3315 Gang box fire; 7-5, SD-99-2276 Improper movement of hazardous waste; 2-11, SD-99-0460 Unauthorized waste disposal off-site by Sandia employee has consequences</p>	
<b>6</b>	<b>Is the area posted as a high noise area or will the work activities result in an uncharacterized noise exposure?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Hearing Conservation for only those personnel identified by H&amp;S to Occupational Medicine as participants in the hearing conservation program.  <b>References:</b> MAN-072-OS&amp;IH PM Chapter 33, <i>Hearing Conservation Program</i>  <b>Medical Monitoring:</b> Required for personnel in the Hearing Conservation Program.  <b>Process Guidance:</b> Evaluate the use of engineering or administrative controls to reduce the noise levels associated with the work activities. Provide training in the health effects of high noise exposure and the OSHA standard. Use hearing protection. If area is not posted as a high noise area, but seems noisy, contact H&amp;S for guidance and evaluation if necessary. H&amp;S involvement is required for uncharacterized noise exposure.  <b>Lessons Learned:</b> 7-1, SD-98-2131 Heavy equipment bumps platform: concrete strikes worker</p>	
<b>7</b>	<b>Could workers be exposed to environments that may be immediately dangerous to life and health or chemicals for which air purifying respiratory protection is inadequate (e.g., methylene chloride, nitric acid, carbon monoxide, carbon dioxide, or other oxygen deficient atmospheres)?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> The specific training will need to be determined by the Job Supervisor based on the known hazards (e.g., respiratory, HazCom).  <b>References:</b> MAN-072-OS&amp;IH PM Chapter 31, <i>Respiratory Protection Practices</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Contact H&amp;S for guidance.  <b>Lessons Learned:</b> 1-10, SD-99-0141 Carbon monoxide safety: think about it; 8-13, SD-99-2990 More is not always better</p>	
<b>8</b>	<b>Will asbestos containing material or potential asbestos containing material be disturbed?</b>
<p><b>Checklist / Permit:</b> State Permit may be required per criteria below.  <b>Additional Training:</b> Asbestos Awareness. Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific Waste Handling training and qualifications. Only Colorado Certified Asbestos Workers can perform asbestos abatement.  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 19, <i>Asbestos Management Program</i> &amp; CO Reg. #8 Part B, <i>Asbestos</i>  <b>Medical Monitoring:</b> Required for personnel identified as Asbestos Workers by Safety &amp; Industrial Hygiene.  <b>Process Guidance:</b> Asbestos has been used in a great variety of products. Some items that may contain asbestos are; pipe insulation, filler in plastics, wall sizing, continuous pour concrete walls, cement blocks, roofing felt, floor tiles, adhesives, acoustical ceiling tile, building siding, paint, cloth for fire blankets, curtains and drapes, and general insulation materials. The following controls must be followed:</p> <ul style="list-style-type: none"> <li>• If greater than 25 linear feet of thermal system insulation or 10 square feet of thermal system insulation or surfacing asbestos containing material and potential asbestos containing material, is to be removed, a separated decontamination station must be established.</li> <li>• If greater than 260 linear feet or 160 square feet of thermal system insulation or surfacing asbestos containing material or potential asbestos containing material or the volume equivalent of one 55 gallon drum, a separate decontamination station must be established and a state permit is required.</li> </ul> <p>If potential asbestos containing material, consult H&amp;S and Facility Management for the status of the material. If a facility characterization does not exist or the Facility Manager indicates material is uncharacterized, request assistance from H&amp;S to characterize. Refer to the Site Quality Assurance Manual and/or contact Quality Assurance to determine if their involvement is required.  <b>Lessons Learned:</b> 3-2, SD-99-0689 D&amp;D electrical safety lessons learned; 9-12, SD-99-3266 Cover your asbestos abatement plans completely</p>	

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9	<b>Will worker be exposed to falling objects (e.g., construction area)?</b>
<b>Checklist / Permit:</b> N/A <b>Additional Training:</b> None <b>References:</b> MAN-072-OS&IH PM, Chapter 34, <i>Head Protection</i> <b>Medical Monitoring:</b> N/A <b>Process Guidance:</b> Head protection will be required. <b>Lessons Learned:</b> 9-17, SD-99-3285 Falling object hits worker; 11-2, SD-98-3836 Look out below	
10	<b>Are compressed gas cylinders or systems to be used?</b>
<b>Checklist / Permit:</b> N/A <b>Additional Training:</b> Pressure Safety Awareness for personnel and their supervisors who operate, maintain, inspect or transport 150 psig pressure systems and gas cylinders up to 4600 psig. <b>References:</b> MAN-072-OS&IH PM Chapter 15, <i>Pressure Systems</i> ; <i>Chemical Management Manual</i> <b>Medical Monitoring:</b> N/A <b>Process Guidance:</b> Compressed gas is considered a chemical and is a gas that is stored and used at pressures greater than normal atmospheric pressure (15 psia); supplied to users in cylinders or through piping systems. Contact Environmental & H&S for review because some compressed gases have specific storage, management, ventilation and piping requirements. <b>Lessons Learned:</b> 5-19, SD-99-1809 Flashback during cutting operations; 6-4, SD-98-1797 Track-hoe counterweight strikes oxygen/acetylene bottles on cart at former Building 123 site	
11	<b>Are pressure vessels, systems and relief devices included in the work scope, or is there exposure to pressurized vessels other than gas cylinders in the vicinity of the work area that are not protected by compliant pressure devices?</b>
<b>Checklist / Permit:</b> N/A <b>Additional Training:</b> Pressure Safety Awareness for personnel and their supervisors who operate, maintain, inspect or transport 150 psig pressure systems and gas cylinders up to 4600 psig. <b>References:</b> MAN-072-OS&IH PM Chapter 15, <i>Pressure Systems</i> ; Chemical Management Plan; Integrated Tank Management Plan, SM-137, Inspection of Tanks or Piping Systems Pressure Vessels and Safety/Relief Devices <b>Medical Monitoring:</b> N/A <b>Process Guidance:</b> Cylinders and pressure vessels; interconnecting hardware (including piping and tubing); instrumentation, and devices such as valves pressure relief equipment that contains fluids (liquids and gases) operating at pressure greater than nominal atmospheric pressure (15 psia) are included. Minimize the number of personnel in the work area, and reduce exposure time in the area to that required for actual work task accomplishment. Pressure relief valves <b>SHALL</b> be visually inspected annually, and after the pressure relief valve has been shut down for maintenance. Unless like-for-like replacement or repair is being done contact H&S and Engineering for assistance. Contact Environmental for proper evaluation of air emissions consent order requirements, and tank standards. Contact Quality for all maintenance and/or replacement of pressure relief valves. <b>Lessons Learned:</b> 12-6, SD-99-1121 Lockout/Tagout; 4-3, SD-99-1121 Pressurization during air fitting removal; 9-10, SD-98-3227 Pressure safety	

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<b>12</b>	<b>Is the work to include movement of material, tools, or equipment. If "NO", then proceed to question #13.</b>
<b>12a</b>	<p><b>Is hoisting and rigging equipment to be used?</b></p> <p><b>Checklist / Permit:</b> Required. Hoisting and Rigging checklist must be completed prior to commencement of activities. Additionally, a Lift Plan may be required (as determined by the Hoisting and Rigging checklist).</p> <p><b>Additional Training:</b> Hoisting Apparatus Training for personnel who operate hoists and cranes.</p> <p><b>References:</b> MAN-072-OS&amp;IH PM Chapter 12, <i>Hoisting and Rigging</i>, DOE-STD-1090-99, <i>Hoisting and Rigging</i></p> <p><b>Medical Monitoring:</b> Required. Operators of cab-operated or mobile cranes must be physically qualified.</p> <p><b>Process Guidance:</b> Hoisting Equipment, a general term used to indicate cranes or suspended machinery that is used for lifting or lowering a freely suspended, unguided load. Hoisting equipment is generally considered to be located above the hook to which rigging equipment or accessories are attached. Rigging Equipment, a general term used to indicate material handling devices such as slings (all types) or structural, mechanical, vacuum, or magnetic below-the-hook lifting devices used for lifting and moving material with hoisting equipment. Rigging equipment does not include those devices defined as rigging accessories. Rigging Accessories, a general term used to indicate devices used in conjunction with hoisting and rigging equipment, such as shackles, eyebolts, turnbuckles, or load-indicating devices. The equipment access <b>SHALL</b> be direct and the path of lift clear of obstructions and electric power lines. Refer to the Site Quality Assurance Manual and/or contact Quality Assurance to determine if their involvement is required. A lift <b>SHALL</b> be designated as a critical lift if collision, upset, or dropping could result in any one of the following:</p> <ul style="list-style-type: none"> <li>• Damage that would result in unacceptable delay to schedule or other significant program impact, (e.g., loss of vital data).</li> <li>• Significant release of radioactive/other hazardous material or other undesirable conditions.</li> <li>• Unacceptable risk of personnel injury or significant adverse health impact (on-site or off-site).</li> <li>• Undetectable damage that would jeopardize future operations or the safety of a facility.</li> </ul> <p><b>NOTE:</b> A lift should also be designated as critical if the load requires exceptional care in handling because of size, weight, close-tolerance installation, high susceptibility to damage, or other unusual factors.</p> <p><b>Lessons Learned:</b> 7-2, SD-98-2117 Crane/hoisting safety lessons; 6-15, SD-99-2016 Hoist cable failure; 12-10, SD-99-3989 Chain binders and cheater bars</p>
<b>12b</b>	<p><b>Is a powered industrial truck (forklift) to be used?</b></p> <p><b>Checklist / Permit:</b> Required. An operator's daily inspection checklist must be completed prior to using the powered industrial truck.</p> <p><b>Additional Training:</b> Industrial Truck Safety Training</p> <p><b>References:</b> MAN-072-OS&amp;IH PM, Chapter 11, <i>Powered Industrial Trucks</i></p> <p><b>Medical Monitoring:</b> Required. Powered industrial truck operators must be physically qualified.</p> <p><b>Process Guidance:</b> Refer to the Site Quality Assurance Manual and/or contact Quality Assurance to determine if their involvement is required. Use of accessories or attachments not approved by the manufacturer is not allowed. Consult with H&amp;S and Engineering on all moves that are defined as "Critical". A lift <b>SHALL</b> be designated as a critical lift if collision, upset, or dropping could result in any one of the following:</p> <ul style="list-style-type: none"> <li>• Damage that would result in unacceptable delay to schedule or other significant program impact, e.g., loss of vital data.</li> <li>• Significant release of radioactive/other hazardous material or other undesirable conditions.</li> <li>• Unacceptable risk of personnel injury or significant adverse health impact (on-site or off-site).</li> <li>• Undetectable damage that would jeopardize future operations or the safety of a facility.</li> </ul> <p><b>NOTE:</b> A lift should also be designated as critical if the load requires exceptional care in handling because of size, weight, close-tolerance installation, high susceptibility to damage, or other unusual factors.</p> <p><b>Lessons Learned:</b> 11-1, SD-99-3447 Dropped loads; 7-13, SD-99-2533 Forklift truck modifications; 3-15, SD-99-1008 Forklift spotters</p>
<b>12c</b>	<p><b>Will rollers (multi-tons), lift tables, jacks, or other material movement accessories be used?</b></p> <p><b>Checklist / Permit:</b> N/A</p> <p><b>Additional Training:</b> Job Specific as determined by planning team</p> <p><b>References:</b> MAN-072-OS&amp;IH PM, Chapter 50, <i>Material Storage, Handling and Towing</i></p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Consult with H&amp;S and Engineering on all moves that are defined as "Critical". See 12b criteria.</p> <p><b>Lessons Learned:</b> 9-2, SD-98-3030 Use the right stuff (people and equipment) for the job; 8-5, SD-99-2634 Mechanical jack replaced with stationary tool</p>



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13	<p><b>Is spark, flame, or heat producing work, to include welding, cutting and/or brazing to occur?</b> If "NO", then proceed to question #14.</p>
	<p><b>Checklist / Permit:</b> Hot Work Checklist [unless work is to occur in a NS/FP pre-approved designated welding area (i.e., machine shop)]  <b>Additional Training:</b> Welding Safety for personnel who work around or use welding equipment for welding, cutting, or brazing and their supervisors; personnel who stand fire watch for welding operations and their supervisors. Workers will have verifiable welding craft competencies.  <b>References:</b> MAN-072-OS&amp;IH PM Chapter 49, <i>Welding, Cutting and Brazing</i>, 1-W13-HSP-31.10, <i>Hot Work</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Ensure proper hot work permit is implemented. Proper grounding of electric equipment, guarding from flash and slag, engineering controls and special Personal Protective Equipment (PPE) are necessary. Contact Engineering and Quality, if welding is to be coded welding. Also ensure all Welders are qualified to perform coded welding per SM-126. Contact H&amp;S for further guidance. Contact Fire Protection Engineering or Fire Department as appropriate for further guidance. Quality Assurance involvement is required if the welding is performed to verify conformance in accordance with the Site Quality Assurance Program. Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual and the activity has the potential to impact fissile material.  <b>NOTE:</b> Ozone may be generated by ultraviolet radiation from welding arcs. This is particularly true with gas-shielded arcs, especially when argon is used, and during plasma-arc cutting operations. The effect is magnified if the welding materials or nearby surfaces reflect the arc. The ozone can be kept from the worker's breathing zone with a low-velocity, high-volume ventilation flow.  <b>Lessons Learned:</b> 12-2, SD-99-3872 Oxygen hazards; 6-16, SD-99-2017 Second degree burns; 3-1, SD-99-0677 Worker falls through unprotected opening</p>
13a	<p><b>If welding, cutting or brazing is to be performed, is the material to be worked on contaminated with either fixed or removable radioactive material, or does the work surface or area have a radiological history?</b></p>
	<p><b>Checklist / Permit:</b> Radiological Work Permit  <b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.  <b>References:</b> Radiological Control Manual  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Contact Radiological Engineering/Operations to assess Radiological Work Permit needs. Fire retardant Anti-C's <b>SHALL</b> be specified on Hot Work Permit as necessary based on the analysis of the work hazards. Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual and the activity has the potential to impact fissile material.  <b>Lessons Learned:</b> 10-5, SD-98-3745 Appropriate response because of proper planning; 6-6, Essential: clear communication and understanding of welding safety requirements</p>
13b	<p><b>Is spark, flame, or heat producing work, to include welding, cutting, and/or brazing, to occur in a nuclear facility, other than in a NS/FP pre-approved designated welding area (e.g., machine shop)?</b></p>
	<p><b>Checklist / Permit:</b> Hot Work Permit  <b>Additional Training:</b> Welding Safety for personnel who work around or use welding equipment for welding, cutting, or brazing and their supervisor; personnel who stand fire watch for welding operations and their supervisor.  <b>References:</b> 1-X92-HSP-34.10, <i>Fire Dampers</i>, 1-W13-HSP-31.10, <i>Hot Work</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Hot Work requires a Hot Work Permit issued by the Fire Department! It also requires the posting of a qualified Fire Watch, accessibility of fire extinguishing equipment, and the control of combustibles in the hot work area. In a nuclear facility, such work may have additional restrictions of controls and requires that facility management (i.e., Shift Manager) be cognizant of the planned work and knowingly authorize the work through the Plan-of-the-Day. Contact Fire Protection Engineering or Fire Department as appropriate for further guidance. Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual and the activity has the potential to impact fissile material.  <b>Lessons Learned:</b> 10-5, SD-98-3745 Appropriate response because of proper planning; 6-6, Essential: clear communication and understanding of welding safety requirements</p>

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14	<p><b>Is there a beryllium exposure hazard</b></p> <ul style="list-style-type: none"> <li>• Is beryllium to be handled,</li> <li>• Are surfaces in the work area beryllium contaminated or suspected to be beryllium contaminated,</li> <li>• Will equipment (including process systems) be worked on that are suspected of being beryllium contaminated,</li> <li>• Will workers enter a beryllium operations area or a limited access beryllium operations area,</li> <li>• Or is there a potential beryllium inhalation exposure during the work activities?</li> </ul>
	<p><b>Checklist / Permit:</b> Required. Complete the Beryllium Work Form according to the Chronic Beryllium Disease Prevention Program Implementation Plan.</p> <p><b>Additional Training:</b> According to the determination made by the project Industrial Hygienist, training is required for Incidental Beryllium Workers and Beryllium Workers. Incidental Beryllium Workers are required to complete the Beryllium Awareness Training course at least every two years. Beryllium Workers are required to complete the Beryllium Awareness Training Course and the Beryllium Worker Training Course every two years.</p> <p><b>References:</b> MAN-072-OS&amp;IH PM, Chapter 28, <i>Chronic Beryllium Disease Prevention Program</i></p> <p><b>Medical Monitoring:</b> According to the determination made by the project industrial hygienist, medical surveillance is required for Incidental Beryllium Workers and Beryllium Workers. Coordination must be made with the Occupational Medical Department at least one month prior to work in order to complete the required medical surveillance prior to initiation of work.</p> <p><b>Process Guidance:</b> Use the KH H&amp;S Homepage, <a href="http://rfetshp/S&amp;IH/berylliu.htm">http://rfetshp/S&amp;IH/berylliu.htm</a> to determine if work is to be conducted in any of the beryllium areas listed, if items in areas listed on the to be removed from the areas, or if waste is to be generated for any of the areas listed. Refer to OS&amp;IH PM Chapter 28 to determine if items defined as beryllium or beryllium articles to be handled? H&amp;S is required to complete a beryllium work permit, beryllium hazard/risk assessment, a beryllium exposure assessment plan, and any other paperwork required by the OS&amp;IH PM Chapter 28 during work planning. All documentation associated with an operation involving potential beryllium exposure must be maintained with the work package. Addition of new beryllium workers will require written approval from the cognizant Operation's K-H Vice President with concurrence from the K-H Vice President for safety. Complete the beryllium release form for equipment to be released from beryllium areas. Have Environmental determine appropriate actions for waste.</p> <p><b>Lessons Learned:</b></p>
15	<p><b>Is work to be performed on domestic (potable) water lines?</b></p>
	<p><b>Checklist / Permit:</b> N/A</p> <p><b>Additional Training:</b> Job Specific as determined by planning team</p> <p><b>References:</b> ANSI/AWWA C651-86, <i>Disinfecting Water Mains</i></p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> All equipment will require disinfection prior to coming in contact with potable water. Only Colorado Department of Public Health and Environment Certified Technicians are allowed to perform work on Domestic Water Backflow Preventers. Notify Bldg. 124 Operations Officer of Responsible Charge that work is being performed on a Domestic Water Line. Refer to the Site Quality Assurance Manual and/or contact Quality Assurance to determine if their involvement is required.</p> <p><b>Lessons Learned:</b> 6-6, SD-99-1918 Communicate through a pre-job brief; 12-14, SD-98-4252 Communication failure</p>
16	<p><b>Are lead, lead containing products, or painted surfaces being cut, scraped, recycled, sanded or melted?</b></p>
	<p><b>Checklist / Permit:</b> N/A</p> <p><b>Additional Training:</b> Lead in the Workplace for personnel in jobs with potential lead contamination exposure above applicable threshold levels, as identified by H&amp;S.</p> <p><b>References:</b> MAN-072-OS&amp;IH PM Chapter 20, <i>Lead Exposure Program, Offsite Waste Management Program</i></p> <p><b>Medical Monitoring:</b> Required for personnel identified as Lead Workers.</p> <p><b>Process Guidance:</b> Contact H&amp;S and Environmental for guidance. Any material being offered for recycling, melting, etc., may only be managed by K-H approved facilities. Contact Environmental for a list of approved facilities. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.</p> <p><b>Lessons Learned:</b> 11-1, SD-99-3651 Respirator protection factor for lead exceeded; 3-14, SD-99-0989 Lead exposure (paint); 5-14, SD-99-1753 Off site contamination (lead bricks)</p>

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<b>17</b>	<b>Is work to be performed on batteries?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Hazard Communication or Electrical Safety training may be required depending on battery type. Workers will have verifiable electrical craft competencies.  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 38, <i>Batteries</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Many types and sizes of batteries are used at the Site. Emphasis is placed on flooded cell and sealed valve regulated batteries. These two types of batteries and battery systems have both chemical and electrical hazards. During charging of these batteries, hydrogen is generated. Hydrogen produces an explosive atmosphere that can be easily detonated. Ventilation of such an area is important. Review type of battery (wet or dry electrolyte) and associated hazards. PPE: Class III Eye Protection &amp; Gloves.  <b>Lessons Learned:</b> 10-4, SD-99-3315 Gang box fire (batteries); 4-11, SD-99-1267 Complacency (corroded battery straps)</p>	
<b>18</b>	<b>Are explosives to be handled?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Hazard Communications. Workers will have verifiable explosive handling competencies.  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 48, <i>Explosives Safety, Chemical Management Manual</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Only properly trained personnel are to handle explosives. Contact Fire Protection Engineering or Fire Department as appropriate for further guidance. Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual.  <b>Lessons Learned:</b></p>	
<b>19</b>	<b>Does the activity involve maintenance of a ventilation system or ducting where a fume hood or glovebox was vented and the potential for an explosion may exist due to residual perchlorates?</b>
<p><b>Checklist / Permit:</b> Environmental Checklist  <b>Additional Training:</b> Hazard Communications  <b>References:</b> RCRA permit dictates management of perchlorates if found.  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Perchloric acid was used in fume hoods for metal analysis. The mists from the digestion process left residual perchlorate on the walls of the duct work. Once evaporated, perchlorate crystals may remain on the walls of the duct work. Perchlorate crystals are shock sensitive and may detonate if disturbed. Evaluate lessons learned and processes from the Building 123 demolition. Contact Environmental and H&amp;S for guidance. Contact Fire Protection Engineering or Fire Department as appropriate for further guidance.  <b>Lessons Learned:</b> 10-5, SD-98-3745 Appropriate response because of proper planning</p>	
<b>20</b>	<b>Will an established and marked exit or egress route be blocked, rerouted, or changed while work is being performed?</b>
<p><b>Checklist / Permit:</b> Required. Complete the Request to Barricade an Egress Exit form in accordance with 1-PRO-184-HSP-32.09.  <b>Additional Training:</b> None  <b>References:</b> 1-PRO-184-HSP-32.09, <i>Exits (Means of Egress)</i>  <b>Medical Monitoring:</b> None  <b>Process Guidance:</b> Contact Fire Department, H&amp;S, and the Shift Superintendent to evaluate and help establish alternative exits.  <b>Lessons Learned:</b></p>	

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<b>21</b>	<b>Will the activity involve elevated work? If "NO", then proceed to question #22.</b>
<b>21a</b>	<b>Will ladders be used for this work?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Ladder Safety Awareness and/or Fall Protection Awareness  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 39, <i>Ladder Safety</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Ladder usage requirements <b>SHALL</b> be complied with in accordance with OS&amp;IH PM Chapter 39. Ladders are primarily designed to access a desired work location and may be used to perform work. However, depending on the nature of the work to be performed, use of a ladder to perform work at heights exceeding six feet is generally not considered desirable without first considering implementation of additional fall protection measures. When conditions dictate, and it is feasible to do so, alternative work methods or fall protection provisions which would provide a higher degree of employee protection are recommended. The use of elevated work platforms, scaffolds, aerial lifts, or requiring an employee working on the ladder to wear fall arrest equipment (attached to a proper anchorage), are all examples of options which should be considered.  <b>Lessons Learned:</b> 9-17, SD-99-3285 Falling object hits worker;  3-24, SD-98-1048 Worker in critical condition from injuries that resulted from clothing caught in rotating fan shaft</p>	
<b>21b</b>	<b>Is scaffolding required?</b>
<p><b>Checklist / Permit:</b> Required. Complete the Scaffold Permit/Log in accordance with OS&amp;IH PM Chapter 40.  <b>Additional Training:</b> Scaffolding Safety for Builders/Erectors, Scaffolding Safety for Competent Persons, All Scaffold Users are required to attend Fall Protection Awareness.  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 40, <i>Scaffolds</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Scaffolds are elevated temporary work surfaces (platforms) used to support workers in construction and maintenance tasks. Scaffolds <b>SHALL</b> be erected, moved, dismantled, or altered only under the supervision and direction of a competent person. Scaffolds and scaffold components <b>SHALL</b> be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity. Only trained and qualified workers <b>SHALL</b> erect, use, or dismantle scaffolds.  <b>Lessons Learned:</b> 7-8, SD-98-2881 Carpenter struck by scaffolding</p>	
<b>21c</b>	<b>Is fall protection required?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Fall Protection Awareness for personnel who work in areas that could result in a fall of 6 feet or more, either above or below ground level.  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 42, <i>Fall Protection and Equipment</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Fall protection is required when employees are exposed to fall hazards of 6 feet or more. Fall protection requirements <b>SHALL</b> be complied with in accordance with OS&amp;IH PM Chapter 42.  <b>Lessons Learned:</b> 5-4, SD-99-1510 Fall protection</p>	
<b>21d</b>	<b>Is an aerial work platform to be used?</b>
<p><b>Checklist / Permit:</b> Required. The Aerial Lift Checklist or the Powered and Non-Powered Vertical Lift Checklists <b>SHALL</b> be completed as applicable.  <b>Additional Training:</b> Aerial Lift Training for Aerial Lift Operators, Bucket Truck Safety for Alarm Technicians who operate bucket trucks. Lineman Bucket Truck Safety Training for linemen who operate bucket trucks.  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 41, <i>Work Platforms</i>  <b>Medical Monitoring:</b> Required. Aerial Lift Operators must be physically qualified.  <b>Process Guidance:</b> Aerial work platforms are self and manually propelled, vehicle-mounted, elevated and/or rotating work platforms. Equipment is to be inspected on site, personnel receive special training, and maintenance schedule is current.  <b>Lessons Learned:</b> 9-17, SD-99-3285 Falling object hits worker; 10-5, SD-99-3316 In the ditch</p>	

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21e	Is the work being performed on a roof?
<b>Checklist / Permit:</b> N/A <b>Additional Training:</b> Fall Protect Awareness <b>References:</b> MAN-072-OS&IH PM, Chapter 42, <i>Fall Protection and Equipment</i> <b>Medical Monitoring:</b> N/A <b>Process Guidance:</b> A roof is the exterior surface on the top of a completed building. Low-slope roof means a roof having a slope less than or equal to a four foot rise in twelve horizontal feet with unprotected sides and edges six feet or more above lower levels. Employees <b>SHALL</b> be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system. A steep roof is a roof having a slope greater than four feet rise and twelve horizontal feet with unprotected sides and edges six feet or more above lower levels. Employees <b>SHALL</b> be protected from falling by guardrail systems with toeboards, safety net systems, or personal fall arrest systems. S&S involvement is required if access to the roof of a nuclear building is required. Employees should pay particular attention to high wind warnings before working on a roof. <b>NOTE:</b> If pitch or tar is to be used, request an MSDS. If the pitch or tar contains cresol or related compounds, additional PPE will be required. Exception: The provisions for this subpart do not apply when employees are making an inspection, investigation, or assessment of workplace conditions prior to the actual start of construction work or after all construction work has been completed. <b>Lessons Learned:</b> 6-15, SD-99-2016 Hoist cable failure; 3-17, SD-99-1014 Some repairs can hurt you	
22	Are pinching hazards and/or sharp edges present?
<b>Checklist / Permit:</b> N/A <b>Additional Training:</b> Job Specific as determined by planning team <b>References:</b> None <b>Medical Monitoring:</b> N/A <b>Process Guidance:</b> Use engineered controls or PPE (e.g., leather or Kevlar™ gloves) to reduce or eliminate this problem. <b>Lessons Learned:</b> 3-8, SD-99-0869 Seventy stitches (man-hole cover); 7-12, SD-98-2368 Worker's finger cut when cart rolls during loading; 7-2, SD-98-2117 Crane/hoisting safety lessons	
23	Are ergonomic hazards present? (i.e., does the activity involve working in awkward postures, repetitive motion, and/or the use of force to complete the task)?
<b>Checklist / Permit:</b> N/A <b>Additional Training:</b> Job Specific as determined by safety SME/planning team <b>References:</b> MAN-072-OS&IH PM Chapter 26, <i>Ergonomics</i> , Draft OSHA Standard <b>Medical Monitoring:</b> N/A <b>Process Guidance:</b> Ergonomic Hazard, a physical state of the work environment which is incompatible with the physical or psychological capabilities and limitations of people and which may cause injury to employees. Ergonomic hazards include but are not limited to: <ul style="list-style-type: none"> <li>• Repetitive motion of body parts required to perform work.</li> <li>• Excessive force applied and required to perform work.</li> <li>• Awkward body postures required to perform work.</li> <li>• Static body postures while performing work.</li> <li>• Contact stress on body parts while performing work.</li> <li>• Vibration of equipment, tools, or work environment.</li> <li>• Work systems which do not make reasonable accommodations for the physical limitations of qualified employees who are disabled.</li> <li>• Work systems which are incompatible with individual employee anthropometry (i.e., the study of human body measurements on a comparative basis to the job being performed).</li> </ul> Look for alternate locations, alternate equipment, or limit time an employee performs a given task. Contact H&S for assistance. <b>Lessons Learned:</b> 8-5, SD-99-2634 Mechanical jack replaced with stationary tool; 6-7, SD-99-1924 Contaminated wound; 9-7, SD-99-3096 ALARA and ergonomics - team players	

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<b>24</b>	<b>Does this activity involve areas where temperature or humidity extremes exist or there will be changes in ventilation that could affect human habitability?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> None  <b>References:</b> MAN-072-OS&amp;IH PM Chapter 16, <i>Heat and Cold Stress Prevention</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Heat stress results from the body being prevented from releasing sufficient heat to maintain proper body temperature. This can be caused by working in a hot environment or wearing of PPE. H&amp;S must individually evaluate each case. Any extreme work conditions should be reviewed. During hot weather, be aware of signs of heat stress or exhaustion. Drink plenty of fluids. Cold stress results from exposure to low temperatures without the proper clothing or protection. Cold stress must be given consideration during the winter months when outside work is to be performed. Besides outside work during the winter months, some unusual conditions exist as work inside a large freezer. During cold weather, dress appropriately and watch for signs of hypothermia. Radiological Operations involvement is required if the work involves radioactive material or contamination. Air changes in a room or building must be adequate to remove heat or humidity generated by new or modified equipment, odors, or flammable gasses, and fumes from process operations, restrooms, or stored waste. Zone I, II, or III supply and exhaust must not be interconnected, or overloaded so as to affect flow to existing rooms or gloveboxes. Operations that exhaust chemical vapors to other than Zone I may require elimination of recirculation for the duration. Exhausting of particulates may require the use of prefilters.  <b>Lessons Learned:</b> 7-11, SD-99-2432 Trailer fire; 8-13, SD-99-2990 More is not always better!!;  7-5, SD-98-2278 Freeze protection program lessons learned</p>	
<b>25</b>	<b>Will the activity involve any penetrations into or through, walls, ceilings (including removal of ceiling tiles), floors, slabs, or pads, or demolition of any of these? If "NO", then proceed to question #26.</b>
<p><b>Checklist / Permit:</b> Asbestos Abatement Plan may be required  <b>Additional Training:</b> Lockout/Tagout required for LO/TO Managers, Operations Managers, System Managers, Supervisors, Foremen, LO/TO Isolators and Verifiers. Lockout/Tagout Worker Workshop required for workers and subcontractors. Electrical Safety for Non-Electrical Workers for personnel who are at risk of electrical shock. Electrical Safety for Electrical Workers.  <b>References:</b> MAN-072-OS&amp;IH PM, Chapter 36, <i>Electrical Safety Program</i>, and MAN-072-OS&amp;IH PM Chapter 9, <i>Lockout/Tagout</i>, Chapter 19, <i>Asbestos Management Program</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> For ceiling tiles that are credited within a facility AB, ensure the activity complies with applicable AB controls. Nuclear Safety involvement and an Unreviewed Safety Question Determination is required for modification to nuclear facilities. LO/TO any systems per the effective procedure. Refer to the Site Quality Assurance Manual and/or contact Quality Assurance to determine if their involvement is required. If the wall being penetrated is a firewall, contact Fire Protection for instructions. For penetrations into concrete, masonry, or asphalt, a drawing search and utility locate <b>SHALL</b> be conducted, if feasible. The following, at a minimum, <b>SHALL</b> be conducted for all penetrations regardless of material type (i.e., concrete, drywall, metal, etc.):</p> <ul style="list-style-type: none"> <li>• If surface being penetrated is a firewall, contact Fire Protection for additional instructions.</li> <li>• Specify the activities or equipment involved, potential hazards, and protective measures to be used.</li> <li>• Conduct a visual inspection of the area to be penetrated for electrical utilities and other potentially hazardous encumbrances.</li> <li>• Ensure all power tools or equipment (electrical or pneumatic) used are grounded, of the double insulated type or battery operated.</li> <li>• Ensure all electrical "cord and plug" power tools used are supplied by Ground Fault Circuit Interrupter protected circuits.</li> <li>• Ensure approved rubber-insulating gloves (approved for the maximum potential voltage) are used.</li> <li>• Where feasible (for hollow surfaces), use a "drill-stop" or drill and exploratory hole and observe/inspect for obstructions.</li> <li>• For penetrations with a specified depth, such as anchor bolt installations, use a drill stop to prevent inadvertent penetration through the wall, slab, ceiling, etc.</li> </ul> <p><b>Lessons Learned:</b> 1-4, SD-00-0332 Electrical conduit breach; 9-3, SD-99-3063 Penetration work planning</p>	

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<b>25a</b>	<b>Is the material being penetrated in a radiologically posted area or will the penetration protrude into a radiologically controlled area?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Radiological Engineering for evaluation of additional controls.</p> <p><b>Lessons Learned:</b> 8-12, SD-98-2885 Inaccurate drawing history results in near miss</p>	
<b>25b</b>	<b>Is there record, evidence or suspicion that the material being penetrated could have come in contact with radioactive material?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Radiological Engineering for evaluation of additional controls.</p> <p><b>Lessons Learned:</b> 8-12, SD-98-2885 Inaccurate drawing history results in near miss</p>	
<b>25c</b>	<b>Has the surface of the material being penetrated been treated in any way such that absorbed contamination could be hidden (e.g., painted, scabbled, or other decon efforts)?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit. May be governed under the RCRA permit if RCRA contaminants are present.</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course. RCRA generator training</p> <p><b>References:</b> Radiological Control Manual, RCRA</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Radiological Engineering for evaluation of additional controls.</p> <p><b>Lessons Learned:</b> 8-12, SD-98-2885 Inaccurate drawing history results in near miss</p>	
<b>25d</b>	<b>Will the activity involve any penetrations into a Material Access Area?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Radiological Engineering and Safeguards &amp; Security for evaluation of additional controls.</p> <p><b>Lessons Learned:</b> 8-12, SD-98-2885 Inaccurate drawing history results in near miss</p>	

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25e	<b>Will the activity involve penetrating or cutting a hole through the tertiary confinement of a nuclear building?</b>
<p><b>Checklist / Permit:</b> If one is necessary, a Justification for Continued Operations is required to be approved by the Department of Energy</p> <p><b>Additional Training:</b> None</p> <p><b>References:</b> Nuclear Safety Manual, 1-MAN-018-NSM</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> If one is necessary ensure a Justification for Continued Operations is prepared and approved in time for the activity. Contact Nuclear Safety for guidance.</p> <p><b>Lessons Learned:</b> 9-3, SD-99-3063 Penetration work planning</p>	
26	<b>Does this activity involve a configuration change or modification?</b>
<p><b>Checklist / Permit:</b> N/A</p> <p><b>Additional Training:</b> None</p> <p><b>References:</b> Site Engineering Requirements Manual and DES-210.</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual. Criticality engineering should determine if the proposed change will impact any criticality safety requirements including neutron detectors associated with the Criticality Accident Alarm System. For facilities with Facility Nuclear Accident Dosimeters, Radiological Engineers should ensure the Facility Nuclear Accident Dosimeters are still in an appropriate position relative to any permanent building shielding (equipment, GBs, etc) based upon the proposed design configuration change. Nuclear Safety support is required for buildings that are governed by the Nuclear Safety Manual. Refer to the Site Quality Assurance Manual and/or contact Quality Assurance to determine if their involvement is required.</p> <p><b>Lessons Learned:</b> 1-4, SD-00-0332 Electrical conduit breach; 7-5, SD-98-2278 Freeze protection program lessons learned</p>	
26a	<b>Does this activity add equipment that could generate substantial heat, noise, or vibration?</b>
<p><b>Checklist / Permit:</b> N/A</p> <p><b>Additional Training:</b> None</p> <p><b>References:</b> Site Engineering Requirements Manual and DES-210.</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Addition of equipment or processes that generated heat, noise or vibration may require engineering controls to lessen the effects, such as increased ventilation, sound absorbing covers or barriers, vibration isolators, or addition of cooling systems. Signs for administrative controls, such as requiring hearing protection may also be needed.</p> <p><b>Lessons Learned:</b> 1-4, SD-00-0332 Electrical conduit breach; 7-5, SD-98-2278 Freeze protection program lessons learned</p>	
26b	<b>Does this activity add equipment or systems that could bring in large amounts of flammable or potentially asphyxiant gasses (i.e., propane, Ar, He, H<sub>2</sub>, N<sub>2</sub>, CO<sub>2</sub>, etc.) or venting of significant quantity of such gasses inside of buildings?</b>
<p><b>Checklist / Permit:</b> N/A</p> <p><b>Additional Training:</b> None</p> <p><b>References:</b> Site Engineering Requirements Manual and DES-210.</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Analysis must be completed to show whether the maximum credible leak or overpressure venting could drive oxygen levels below 19.5%, or if under any circumstances a flammable or explosive mixture could exist. Either of these situations could require increased ventilation, or electrical classification as a hazardous area, requiring special electrical equipment to comply with the National Electrical Code. Stratification of gas or collecting in low spots is also a possibility.</p> <p><b>Lessons Learned:</b> 1-4, SD-00-0332 Electrical conduit breach; 7-5, SD-98-2278 Freeze protection program lessons learned</p>	



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26c	<b>Does this activity involve structural modifications to buildings, substantial change in floor loading, drilling in pre-cast beams, cutting a significant number of re-bar, supporting or removing large loads, or moving heavy equipment?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> None  <b>References:</b> Site Engineering Requirements Manual and DES-210.  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> When adding new equipment or moving heavy loads, floor loading must be checked. All areas must have floor loading signs clearly posted. Installations that require drilling in concrete, particularly pre-stressed beams, must be called out by structural engineer, to avoid cutting critical re-bar or cable, and seriously weakening the structure. Large or heavy loads must be checked for seismic response and anchoring in buildings handling fissionable material.  <b>Lessons Learned:</b> 1-4, SD-00-0332 Electrical conduit breach; 7-5, SD-98-2278 Freeze protection program lessons learned</p>	
27	<b>Does the activity involve movement, interaction or removal of fissile material?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Nuclear Material Handlers and Transporters, Nuclear Criticality Safety Training for Fissionable Material Handlers, Nuclear Criticality Safety Training for Supervisors and Designers, and Nuclear Criticality Safety Training for Support Personnel  <b>References:</b> Safeguards &amp; Accountability Manual (1-MAN-010-S&amp;A) and Nuclear Material Safeguards Manual (MAN-010-NMS)  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Contact Nuclear Material Safeguards for guidance and requirements. Nuclear Material Safeguards has the Safeguards &amp; Accountability Manual (1-MAN-010-S&amp;A) that addresses the safeguards for radioactive material activities onsite. The manual requirements are consistent with DOE 5633.3B order compliance criteria. There is specific measurement, surveillance and documentation requirements that are needed to ensure activities with radioactive materials go as planned. Fissile material handling and storage must be in compliance with building NMSM. Work Control document must receive a Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD). Each WCD step that implements an administrative control from a Criticality Evaluation <b>SHALL</b> be identified with the circle CS symbol (CS) to the left of the step number.  <b>Lessons Learned:</b> 11-13, SD-99-3766 Incorporate lessons learned; 9-7, SD-99-3096 ALARA and ergonomics - team players</p>	
28	<b>Are flammable/explosive gases involved in or required for the work in a nuclear facility, other than in an approved area (e.g., maintenance shop)?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Hazard Communication  <b>References:</b> Applicable Authorization Basis (AB) Document  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Work Control document must receive a Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD). Contact Fire Protection Engineering or Fire Department as appropriate for further guidance.  <b>Lessons Learned:</b> 12-2, SD-99-3872 Oxygen hazards; 6-11, SD-99-1994 !Call before you dig!; 5-19, SD-99-1809 Flashback during cutting operations</p>	

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<b>29</b>	<b>Is the work activity occurring within a building or structure that currently has or previously had radioactive material? If "NO", then proceed to question #30.</b>
<b>29a</b>	<b>Is the work being conducted in a posted Radiation Area, High Radiation Area, or Very High Radiation Area?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit  <b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course. RCTs will have verifiable radiological control competencies.  <b>References:</b> Radiological Control Manual  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Work in Radiation Areas, High Radiation Areas, or Very High Radiation Areas may require special training and use of secondary, multiple or supplemental dosimeters. Contact Radiological Engineering for guidance. Work should involve time reduction techniques such as pre-work preparation of paperwork/tools and use of remote tools and/or handling equipment, quick assembly scaffolding and/or ladders, and temporary shielding.  <b>Lessons Learned:</b> 2-14, SD-98-0569 Changing work conditions were not incorporated into work package leading to a near miss situation; 10-1, SD-99-3310 !DOSIMETERS! face front</p>	
<b>29b</b>	<b>Is the work conducted in a posted Contamination Area?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit  <b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course. RCTs will have verifiable radiological control competencies.  <b>References:</b> Radiological Control Manual  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Consider use of contamination reduction techniques including pens/pans, glovebags, and ventilation control as primary control. Respiratory protection should be considered when engineering controls don't reduce contamination to acceptable levels.  <b>Lessons Learned:</b> 9-7, SD-99-3096 ALARA and ergonomics - team players; 11-13, SD-99-3766 Incorporate lessons learned</p>	
<b>29c</b>	<b>Is the work being conducted in a posted High Contamination Area?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit, ALARA Review  <b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course. RCTs will have verifiable radiological control competencies.  <b>References:</b> Radiological Control Manual  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Read and follow the Radiological Work Permit. ALARA review required.  <b>Lessons Learned:</b> 9-16, SD-99-3284 Inspection works; 6-7, SD-99-1924 Contaminated wound</p>	

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<b>29d</b>	<b>Is the work conducted in a posted airborne radioactivity area?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course. RCTs will have verifiable radiological control competencies.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Read and follow the Radiological Work Permit. Respiratory protection will be required. Contact Radiological Engineering for a respiratory evaluation.</p> <p><b>Lessons Learned:</b> 11-13, SD-99-3766 Incorporate lessons learned; 9-16, SD-99-3284 Inspection works; 7-4, SD-99-2224 Ionex air movers</p>	
<b>29e</b>	<b>Has the area ever been designated as a radiological area?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed.</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Radiological Engineering/Operations to assess Radiological Work Permit needs.</p> <p><b>Lessons Learned:</b> 3-2, SD-99-0689 D&amp;D Electrical safety lessons learned</p>	
<b>29f</b>	<b>Does the area's history indicate a past presence of radioactive materials or operations?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed.</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Radiological Engineering/Operations to assess Radiological Work Permit needs.</p> <p><b>Lessons Learned:</b> 9-11, SD-98-3250 Lockout/Tagout rule violations; 3-2, SD-99-0689 D&amp;D electrical safety lessons learned</p>	
<b>29g</b>	<b>Is there a potential for the activity to release radioactive material to the air through mechanical, chemical or other means?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit, RCRA Permit, Environmental Checklist</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course. RCTs will have verifiable radiological control competencies.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Release to the air is defined as air that workers can breath (i.e., release to air that could pose a health threat to workers, co-located workers, or the public). Read and follow the Radiological Work Permit. Radiological Engineering assessment needed for respiratory protection required. Contact Environmental for review regarding air emissions and potential monitoring requirements.</p> <p><b>Lessons Learned:</b> 3-2, SD-99-0689 D&amp;D electrical safety lessons learned</p>	

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29h	<b>Does the area contain, or is it bounded by any radiological postings, barriers, signs or labels?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed.</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual; Chemical Management Manual – Spill/Release Management</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Radiological Engineering/Operations required to assess any radiological controls.</p> <p><b>Lessons Learned:</b> 3-2, SD-99-0689 D&amp;D electrical safety lessons learned; 5-17, SD-99-1790 Read the signs: follow instructions</p>	
29i	<b>Will the activity involve the transfer, pumping, or draining of radioactive or radioactively contaminated liquids?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed.</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Consider use of containment pens/pans, sleeving, and/or glovebags for contamination control. Contact Radiological Engineering/Operations for guidance. Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.</p> <p><b>Lessons Learned:</b> 7-3, SD-98-2259 Hose ruptures: modesty clothing contaminated; 10-5, SD-98-3745 Appropriate response because of proper planning</p>	
29j	<b>Does the work activity involve equipment containing a sealed radioactive source or on equipment capable of generating radiation?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed.</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual, Administration, Inspection, and Control of Radiation Generating Devices, PRO-183-HSP-18.05</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Radiological Engineering/Operations for guidance.</p> <p><b>Lessons Learned:</b> 3-13, SD-98-0772 Radiological engineering provides information for control and safe handling of radiological sources</p>	
29k	<b>Does the work involve penetration into systems, or surfaces containing or suspected of containing radioactive materials or contamination?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed.</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Consider use of shrouded tools, sleeving, and/or ventilation controls for control of airborne radioactivity/contamination. Contact Radiological Engineering/Operations for guidance.</p> <p><b>Lessons Learned:</b> 10-5, SD-98-3745 Appropriate response because of proper planning</p>	

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<b>29l</b>	<b>Does the work involve removal or addition of shielding?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed.</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Radiological Engineering/Operations for guidance.</p> <p><b>Lessons Learned:</b> 5-6, SD-98-1586 Work performed was not included in work package</p>	
<b>29m</b>	<b>Does the activity involve removal of equipment, ducts, piping, gloveboxes, plenums or tanks from a radioactive area?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit</p> <p><b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Safeguards &amp; Accountability Manual (1-MAN-010-S&amp;A)</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Nuclear Material Safeguards for guidance and requirements.</p> <p>Nuclear Material Safeguards has the Safeguards &amp; Accountability Manual that addresses the safeguards for radioactive material activities onsite. The manual requirements are consistent with DOE 5633.3B order compliance criteria. There are specific measurement, surveillance and documentation requirements that are needed to ensure activities with radioactive materials go as planned and any criticality issues are resolved. The activity may involve a potential change to Clean Air Act reported venting locations. Contact Environmental for guidance and any regulatory permit requirements. Work Control document must receive a Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD). Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.</p> <p><b>Lessons Learned:</b> 10-5, SD-98-3745 Appropriate response because of proper planning; 3-2, SD-99-0689 D&amp;D electrical safety lessons learned; 11-3, SD-99-3766 Incorporate lessons learned; 9-10, SD-99-3177 Deluge system activation</p>	
<b>30</b>	<b>Does this activity involve the use of "NEW" processes, equipment, or tools used in the work process? If "NO", then proceed to question #31.</b>
<b>30a</b>	<b>Will this new tool, process or equipment be used for radioactive materials?</b>
<p><b>Checklist / Permit:</b> Radiological Work Permit</p> <p><b>Additional Training:</b> Job Specific as determined by planning team</p> <p><b>References:</b> Safeguards &amp; Accountability Manual, 1-MAN-010-S&amp;A</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Nuclear Material Safeguards for guidance and requirements.</p> <p>Nuclear Material Safeguards has the Safeguards &amp; Accountability Manual (1-MAN-010-S&amp;A) that addresses the safeguards for radioactive material activities onsite. The manual requirements are consistent with DOE 5633.3B order compliance criteria. There are specific measurement, surveillance and documentation requirements that are needed to ensure activities with radioactive materials go as planned. Work Control document must receive a Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD). Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual.</p> <p><b>Lessons Learned:</b> 4-14, SD-99-1294 Cost savings; 5-6, SD-98-1586 Work performed was not included in work package; 10-5, SD-98-3745 Appropriate response because of proper planning</p>	

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<b>30b</b>	<b>Has the user of this new tool, process, or equipment require additional training?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Specific training may need to be developed for using the new tool, process or equipment. Refer to the Training Users Manual (Training Users Manual) for guidance.  <b>References:</b> Training Users Manual  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> None  <b>Lessons Learned:</b> 4-14, SD-99-1294 Cost savings</p>	
<b>31</b>	<b>Will this activity be conducted outside of a building? If "NO", then proceed to question #32.</b>
<b>31a</b>	<b>Is the work being conducted in a soil contamination area?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed.  <b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.  <b>References:</b> Radiological Control Manual, RFCA; MAN-072-OS&amp;IH PM, Chapter 45, <i>Excavation and Trenching</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Contact Radiological Engineering/Operations and Environmental for guidance. Any activity resulting in soil disturbance or removal must be evaluated and, if required, a soil disturbance permit will be issued.  <b>Lessons Learned:</b> 9-11, SD-99-3182 Pre evolution briefing problems</p>	
<b>31b</b>	<b>Will the work involve excavation in an area adjacent to an under-building contamination area?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed.  <b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.  <b>References:</b> Radiological Control Manual; MAN-072-OS&amp;IH PM, Chapter 45, <i>Excavation and Trenching</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Contact Radiological Engineering/Operations and Environmental for guidance. Any activity resulting in soil disturbance or removal must be evaluated and, if required, a soil disturbance permit will be issued  <b>Lessons Learned:</b> 9-11, SD-99-3182 Pre evolution briefing problems</p>	
<b>31c</b>	<b>Does the activity involve soil probing or well installation?</b>
<p><b>Checklist / Permit:</b> Possible Radiological Work Permit needed, Soil Disturbance Permit  <b>Additional Training:</b> The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to RBAs, RAs, or HRAs. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.  <b>References:</b> Radiological Control Manual; Environmental Checklist; MAN-072-OS&amp;IH PM, Chapter 45, <i>Excavation and Trenching</i>  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Contact Radiological Engineering/Operations and Environmental for guidance.  <b>Lessons Learned:</b></p>	

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31d	<b>Will this activity involve excavations, trenching, drilling, geoprobe sampling or any other disturbances of soil to occur?</b>
	<p><b>Checklist / Permit:</b> Soil Disturbance Request and an Excavation Permit, Environmental Checklist</p> <p><b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom).</p> <p><b>References:</b> MAN-072-OS&amp;IH PM, Chapter 45, <i>Excavation and Trenching</i></p> <p><b>Medical Monitoring:</b> RFCA</p> <p><b>Process Guidance:</b> Complete a Soil Disturbance Request and an Excavation Permit prior to soil disturbance. Read and follow the Radiological Work Permit, if required. Radiological Engineering <b>SHALL</b> assess the need for posting and work control requirements. Complete requirements of the Environmental Approval Process Procedure for Construction/Excavation Activities. Complete the Hazardous Waste Determination Form found in this procedure. Prior to returning the removed soil to the excavation, ensure that the soil has been sampled, as necessary, and that the soil to be replaced is evaluated in accordance with the containment concentrations identified in the Rocky Flats Cleanup Agreement (RFCA). K-H Environmental written approval is required for all soil dispositions where radiological constituents exceed background, or hazardous constituents at any contamination level is involved. Refer to the Site Quality Assurance Manual and/or contact Quality Assurance to determine if their involvement is required.</p> <p><b>Lessons Learned:</b> 9-11, SD-99-3182 Pre evolution briefing problems; 8-6, SD-99-2662 Plume project near miss; 11-4, SD-98-3837 Slip sliding away</p>
31e	<b>Will the activity disturb an Individual Hazardous Substance Site and result in potential worker exposure to hazardous substances?</b>
	<p><b>Checklist / Permit:</b> Soil Disturbance Request and an Excavation Permit, Environmental Checklist</p> <p><b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom).</p> <p><b>References:</b> MAN-072-OS&amp;IH PM, Chapter 45, <i>Excavation and Trenching</i>; RFCA</p> <p><b>Medical Monitoring:</b> RFCA</p> <p><b>Process Guidance:</b> Complete a Soil Disturbance Request and an Excavation Permit prior to soil disturbance. Contact Environmental, H&amp;S &amp; Radiological Engineering for guidance. An Individual Hazardous Substance Site is used at RFETS as a single term which combines CERCLA remediation and RCRA corrective action units. Individual Hazardous Substance Site-specific considerations must be incorporated into the radiological determinations for soils and structures within Individual Hazardous Substance Site.</p> <p><b>Lessons Learned:</b></p>
32	<b>Is there a potential for pyrophoric material to be handled, processed, or encountered during the work activity, including generation, transfer or storage of any plutonium metals, solutions, residues, or salts that are within the scope of HSP 31.11?</b>
	<p><b>Checklist / Permit:</b> RCRA Permit, Possible Radiological Work Permit needed, Environmental Checklist</p> <p><b>Additional Training:</b> Hazard Communication. The following training may be required, and should be determined by the Job Supervisor based on the specific tasks: 1) General Employee Radiological Training for personnel who require access to the site and are not qualified Radiological Workers or RCTs. 2) Radiological Worker Level 1 for all workers (except RCTs) who require unescorted access to Radiological Boundary Areas, Radiation Areas, or High Radiation Areas. 3) Radiological Worker Level 2 for all workers (except RCTs) who require unescorted access to contamination and high contamination areas, soil contamination areas, radiation, or very high radiation areas. Radiological work planner must also complete this course.</p> <p><b>References:</b> Radiological Control Manual; Chemical Management Manual, PRO-W89-HSP-31.11, <i>Transfer and storage of Plutonium for Fire Safety</i>; 6 DDR 1007.3 Parts 261-265</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Contact Radiological Engineering/Operations for guidance and notify Environmental. Contact Fire Protection Engineering or Fire Department as appropriate for further guidance. Refer to RCRA regulations and permit when handling metals or other regulated wastes.</p> <p><b>Lessons Learned:</b> 10-5, SD-98-3745 Appropriate response because of proper planning</p>

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33	<b>Will there be a new air emission or a change in the quantity of an existing air emission to the atmosphere (including radionuclide National Emission Standard for Hazardous Air Pollutants)?</b>
<p><b>Checklist / Permit:</b> Title V Air Permit, Environmental Checklist <b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom). <b>References:</b> None <b>Medical Monitoring:</b> N/A <b>Process Guidance:</b> Air emission means any air pollution agent or combustion of such agents, including any physical, chemical biological, radioactive substance or matter which is emitted during or from the activity. Air emission source means any device, article or equipment that emits or has the potential to emit pollutants to the atmosphere including those that do not discharge directly to the atmosphere through a stack, vent or duct. A source is not necessarily associated with or serviced by a discrete single source. Contact Environmental for monitoring and emission tracking requirements. <b>Lessons Learned:</b> 4-18, SD-99-1371 Communicate; 3-2, SD-99-0689 D&amp;D electrical safety lessons learned</p>	
34	<b>Is this work activity being conducted in accordance with a Decommissioning Operations Plan, a Proposed Action Memorandum, an Interim Measures/Interim Remedial Action document, consent orders, Federal Facility Compliance Agreement, or other CERCLA decision document under the Rocky Flats Cleanup Agreement?</b>
<p><b>Checklist / Permit:</b> Title V Air Permit, Environmental Checklist; Agency Documents <b>Additional Training:</b> N/A <b>References:</b> RFCA; Decommissioning Operations Plan; Proposed Action Memorandum; Interim Measures/Interim Remedial Action; Compliance Orders, Federal Facility Compliance Agreement, etc. <b>Medical Monitoring:</b> N/A <b>Process Guidance:</b> Ensure the work is conducted and appropriate notifications are made in accordance with the RFCA/CERCLA decision document. Ensure that appropriate decision documents are submitted to the Administrative Record files. Contact Quality for guidance on those Decommissioning Operations Plans, Proposed Action Memorandums, or Interim Measures/Interim Remedial Actions that reference quality data objectives. Contact Environmental to ensure planned scope of work is in accordance is in accordance with consent orders or Federal Facility Compliance Agreement if applicable. <b>Lessons Learned:</b> 9-1, SD-99-3016 Mercury spill 6-1, SD-98-1770 774 CERCLA tanks plutonium intake event text from an RMRS lessons learned document</p>	
35	<b>Will this activity install, modify, move, or impact an Underground or Aboveground Storage Tank?</b>
<p><b>Checklist / Permit:</b> Potential RCRA Permit <b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom). <b>References:</b> 7-CCR-1101-14, Tank II Database; Integrated Tank Management Plan <b>Medical Monitoring:</b> N/A <b>Process Guidance:</b> Contact Environmental for guidance. Designated Underground Storage Tank or Aboveground Storage Tank Systems must be designed and installed in accordance with 7-CCR-1101-14. <b>Lessons Learned:</b></p>	



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<b>36</b>	<b>Will this activity modify a current RCRA-regulated hazardous waste unit, relocate all or part of a unit, or otherwise impact a unit?</b>
<p><b>Checklist / Permit:</b> RCRA Permit  <b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom).  <b>References:</b> 40 CFR 261; 7-CCR-1007.3 Part 261  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> RCRA-regulated hazardous waste units include accumulation, storage, and treatment units, the containers and tanks within the units, and the associated building structures. Impacts to a unit may include disconnecting power to a unit, excavating nearby which results in infiltration of groundwater into a unit, removing lighting in a unit, or changing the egress route from a unit. Contact the Unit Custodian and Environmental during the planning process to ensure that the RCRA Part B Permit and the regulatory requirements are met throughout the duration of the work activities. Environmental will prepare any necessary permit modifications. Aisle space for inspections and emergency response personnel access to containers and tanks of hazardous waste must be maintained. Copies of the pertinent portions of the IWCP must be placed in the unit's operating record as modifications or repairs are made. Updates to Waste &amp; Environmental Management System will be required for the relocation of containers, and the relocation of Satellite and 90-day accumulation areas. If the work activity will modify a permitted unit, a permit notification may be required prior to initiating work. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.  <b>Lessons Learned:</b></p>	
<b>37</b>	<b>Does the activity include closure of a RCRA hazardous waste unit or placing it in a RCRA stable configuration?</b>
<p><b>Checklist / Permit:</b> RCRA Permit  <b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom).  <b>References:</b> RCRA/RFCA  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Evaluate if the activity will result in partial or full closure of the RCRA unit or place the unit in a RCRA stable condition. Review RCRA Permit Closure Plan to ensure that planned activities meet the requirements of the Plan and a Closure Description Document must be submitted to the Colorado Department of Public Health and Environment for approval or requirements incorporated into a decision document. Contact Environmental for guidance.  <b>Lessons Learned:</b></p>	
<b>38</b>	<b>Will this activity generate waste? If "NO", then proceed to question #39.</b>
<b>38a</b>	<b>Will this activity generate polychlorinated biphenyl (PCB) ballasts or other Toxic Substance Control Act governed waste types, including PCB bulk product or bulk waste?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific Waste Handling training and qualifications.  <b>References:</b> PCB Management Plan, Offsite Waste Management Facility Approval Procedure.  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> If the facility/project does not have a Waste Generating Instruction for waste generated by this activity, contact Environmental for guidance. Storage of any generated waste must be done in compliance with Site procedures. All generated wastes must be tracked in Waste &amp; Environmental Management System to ensure management within regulatory defined timeframes. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.  <b>Lessons Learned:</b> 2-1, SD-99-0326 Waste container contents can be subject to biodegradation effects</p>	

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<b>38b</b>	<b>Will this activity generate a liquid sanitary waste (non-radioactive, non-hazardous aqueous waste)?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom).  <b>References:</b> Sanitary Waste Procedure  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> If the facility/project does not have a Waste Stream &amp; Residue Identification &amp; Characterization process for sanitary wastewater generated by this activity, contact Customer Service for guidance. If this is a routine waste generation activity (e.g., repair of personnel showers which generate non-radioactive non-hazardous wastewater), or if this wastewater is routinely transferred to the Sanitary Treatment Plant for treatment, <b>THEN</b> no additional approvals are required. If not, <b>THEN</b> coordinate of approvals through the Sewage Treatment Plant. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.  <b>Lessons Learned:</b></p>	
<b>38c</b>	<b>Will this activity generate solid sanitary waste which falls into the category of "special sanitary wastes"?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom).  <b>References:</b> Sanitary Waste Offsite Disposal Procedure (1-PRO-573-SWODP); PCB Management Plan  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Examples of "Special Sanitary Wastes" include non-radioactive sludges, chemicals, some PCB contaminated wastes as defined in the management plan, waste materials from spills which are non-hazardous wastes, and non-friable asbestos. Solid sanitary waste is non-radioactive, non-hazardous, and passes the paint filter test for free liquids. Contact Sanitary Waste Programs to dispose of these wastes in the sanitary waste landfill. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.  <b>Lessons Learned:</b></p>	
<b>38d</b>	<b>Will this activity generate solid sanitary waste (excluding prohibited items)?</b>
<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom).  <b>References:</b> Sanitary Waste Offsite Disposal Procedure (1-PRO-573-SWODP)  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Solid sanitary waste is non-radioactive, non-hazardous, and passes the paint filter test for free liquids. Prohibited items are identified in the Sanitary Waste Offsite Disposal Procedure (1-PRO-573-SWODP). Routine solid sanitary wastes can be placed in a dumpster. Non-routine industrial wastes must be shipped to the sanitary landfill with waste acceptance criteria (see Sanitary Waste Disposal Guide). Contact Sanitary Waste Programs for assistance in completing the waste determination and any required documentation for this waste. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.  <b>Lessons Learned:</b> 2-11, SD-99-0460 Unauthorized waste disposal off-site by Sandia employee has consequences</p>	

### APPENDIX 3.3 - JOB HAZARD IDENTIFICATION TOOL/JOB HAZARD ANALYSIS GUIDE

38e	<b>Will this activity generate hazardous, radioactive, or mixed waste?</b>
	<p><b>Checklist / Permit:</b> RCRA Permit</p> <p><b>Additional Training:</b> Job Supervisor <b>SHALL</b> refer to the Training Users Manual for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom).</p> <p><b>References:</b> Chemical Management Manual, Offsite Waste Management Facility Approval Procedure, Waste Certification Procedures, Waste Acceptance Criteria</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> If the facility or project does not have a Waste Generating Instruction for the waste being generated by this activity, contact Customer Service for guidance. Management in Containers or Tanks: Plan in advance for approval to pour aqueous wastes meeting the Building 374 waste acceptance criteria down the process drains. Management in Containers: Plan in advance for accumulation of waste in an appropriate area, and transfer of the waste to a proper accumulation or storage area. Ensure approvals for Satellite or 90-day Accumulation areas are received prior to generating the waste. Ensure that the waste meets the Waste Acceptance Criteria for the storage or treatment area, prior to waste transfer into those areas. If immediate treatment of a hazardous or mixed waste is required, contact Environmental for preparation, submittal, and approval of a generator treatment notification, prior to initiation of waste generation activities. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.</p> <p><b>Lessons Learned:</b> 1-3, SD-00-0310 Mixed waste in package discovered after shipment to Nevada Test Site; 7-5, SD-99-2276 Improper movement of hazardous waste</p>
39	<b>Is the work being conducted in an area covered by a Criticality Accident Alarm System that has been determined to not meet Life Safety / Disaster Warning (LS/DW) system audibility criteria or that has not been tested for LS/DW audibility and Criticality Accident Alarm System beacons are not visible from or within the affected area?</b>
	<p><b>Checklist / Permit:</b> N/A</p> <p><b>Additional Training:</b> The job supervisor and planning team may determine that additional training is required based upon the required compensatory measures.</p> <p><b>References:</b> The applicable documents from the Authorization Basis Documentation List for the facility where the work will be performed.</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> Specific Criticality Accident Alarm System and/or LS/DW Compensatory Measures are required by the facility Authorization Basis in areas where criticality alarm annunciation is considered inoperable. The work activity <b>SHALL</b> comply with the applicable AB compensatory measures. Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual.</p> <p><b>Lessons Learned:</b> 11-12, SD-99-3733 Work control</p>
40	<b>Does this activity impact other facilities outside of the facility where the work is being performed (i.e.: work on the radio feed into the LS/DW system in Building 121 affects other buildings required to broadcast music)?</b>
	<p><b>Checklist / Permit:</b> N/A</p> <p><b>Additional Training:</b> The specific training will need to be determined by the Job Supervisor depending on the hazard.</p> <p><b>References:</b> None</p> <p><b>Medical Monitoring:</b> N/A</p> <p><b>Process Guidance:</b> The specific requirements will need to be determined on a case-by-case basis. Ensure the appropriate Subject Matter Expert is involved with the Control Measure development and that the activity has been properly planned and coordinated with line management from the other affected facilities. Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual. Contact Fire Protection Engineering or Fire Department as appropriate for further guidance. Nuclear Safety support is required for buildings that are governed by the Nuclear Safety Manual. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.</p> <p><b>Lessons Learned:</b> 2-3, SD-99-0335 Communication = Success No communication = Failure; 11-4, SD-99-3509 Unity system issues</p>

### APPENDIX 3.3 - JOB HAZARD IDENTIFICATION TOOL/JOB HAZARD ANALYSIS GUIDE

41	<b>Will the proposed work involve liquid of any types in areas which currently or formerly had fissile solutions?</b>
	<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> N/A  <b>References:</b> Nuclear Criticality Safety Manual  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Any liquid system in a processing or former processing area has the potential to contain fissionable material (i.e., reagent lines, process water lines, etc.). A review by Criticality Safety is needed to determine whether double contingent controls are required to ensure that the liquids drained are not fissionable.  <b>Lessons Learned:</b> Y-12 had a criticality accident in 1958 when process specialists were leak testing a pencil tank with water. This operation was not expected to involve fissionable material in any way; however, a criticality occurred. DOE/NCT-04, "A Review of Criticality Accidents," March 1989.</p>
42	<b>Work with reactive, shock sensitive, explosive (e.g., <i>natural gas, hydrogen, propane</i>) or incompatible chemicals or materials, including decomposition and radiolysis byproducts?</b>
	<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> N/A  <b>References:</b> Applicable facility / company requirements  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Contact Health &amp; Safety, Engineering, Fire Protection Engineering or Fire Department, and Environmental for additional guidance. Explosive is defined as any chemical compound or mechanical mixture that, when subjected to heat, impact, friction, shock, or other suitable initiation stimulus, undergoes a very rapid chemical change with evolution of large volumes of highly heated gases that exert pressures in the surrounding medium. The term applies to materials that either detonate or deflagrate. (6430.1A) For example, natural gas, hydrogen, propane  Shock sensitive is defined as a material which undergoes visible reaction when mechanically shocked, for example, potassium superoxide.  Radiolysis is defined as a reaction produced by radiation (usually decomposition).  Include contingency planning in the work control planning process to maintain the work in a safe condition if the work is stopped or cancelled before completion. Comply with the applicable MSDS.  <b>Lessons Learned:</b> Y-12 Building 9201-5 Type A Accident Investigation, 12/8/99</p>
43	<b>Do any Standing Orders, Operations Orders, or company/facility specific directives/instructions containing additional health and safety requirements apply to the work activity?</b>
	<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> N/A  <b>References:</b> Applicable facility / company requirements  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> Contact the facility and company management for any applicable guidance. Ensure the appropriate Subject Matter Expert is involved with the Control Measure development and that the activity has been properly planned and coordinated. Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual. Nuclear Safety support is required for buildings that are governed by the Nuclear Safety Manual. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.  <b>Lessons Learned:</b></p>
44	<b>Does this activity involve any other hazards not previously identified or could this activity introduce any new hazards?</b>
	<p><b>Checklist / Permit:</b> N/A  <b>Additional Training:</b> The specific training will need to be determined by the Job Supervisor depending on the hazard.  <b>References:</b> None  <b>Medical Monitoring:</b> N/A  <b>Process Guidance:</b> The specific requirements will need to be determined on a case-by-case basis. Ensure the appropriate Subject Matter Expert is involved with the Control Measure development and that the activity has been properly planned and coordinated. Criticality Engineering support is required whenever work is for buildings that are governed by the Nuclear Criticality Safety Manual. Nuclear Safety support is required for buildings that are governed by the Nuclear Safety Manual. Contact Fire Protection Engineering or Fire Department as appropriate for further guidance. The Environmental planning function may be performed by the Environmental Coordinator or Waste Manager as necessary.  <b>Lessons Learned:</b></p>

**APPENDIX 3.4 - JOB HAZARD ANALYSIS (Low & Medium Planning)**

WCF/Procedure No.:	Title/Description:	Date:
Company/Organization	Location:	Page <u>1</u> of <u>    </u>
SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARD (FROM WALKDOWN & JHIT)	REQUIRED CONTROLS
Team Leader (Name / Signature / Date)	Planner (Name / Signature / Date)	H&S (Name / Signature / Date)
Engineer (Name / Signature / Date)	RAD (Name / Signature / Date)	Quality (Name / Signature / Date)
Criticality Engineer (Name / Signature / Date)	Nuclear Safety (Name / Signature / Date)	Environmental and/or Waste (Name / Signature / Date)
Fire Protection (Name / Signature / Date)	Lead Craft / Operator (Name / Signature / Date)	<b>APPROVED:</b> RM (Name / Signature / Date/Organization)

Signature indicates concurrence and approval of the JHIT and the JHA for those programs identified in the JHIT as necessary for planning and that the work control document adequately contains all of the required controls.

### APPENDIX 3.4 - JOB HAZARD ANALYSIS (Low & Medium Planning)

Continuation Sheet

WCF/Procedure No.:	Title/Description:	Date:
Company/Organization	Location:	Page ____ of ____.

[illegible]

**APPENDIX 3.5 - JOB HAZARD ANALYSIS (High Planning)**

WCF/Procedure No.:	Title/Description:			Date:
Company/Organization	Location:			Page <u>1</u> of <u>    </u>
SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARD (FROM JHIT)	WHAT IF? / ADDITIONAL ANALYSES PERFORMED	POTENTIAL CONSEQUENCES	REQUIRED CONTROLS
Team Leader (Name / Signature / Date)		Planner (Name / Signature / Date)		H&S (Name / Signature / Date)
Engineer (Name / Signature / Date)		RAD (Name / Signature / Date)		Quality (Name / Signature / Date)
Criticality Engineer (Name / Signature / Date)		Nuclear Safety (Name / Signature / Date)		Environmental and/or Waste (Name / Signature / Date)
Fire Protection (Name / Signature / Date)		Lead Craft / Operator (Name / Signature / Date)		<b>APPROVED:</b> RM (Name / Signature /Date/Organization)

Signature indicates concurrence and approval of the JHIT and the JHA for those programs identified in the JHIT as necessary for planning and that the work control document adequately contains all of the required controls.

[illegible]



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**APPENDIX 3.6 - PLANNING TEAM CREDENTIALS REPORT FORM**  
(Medium and High Level Planning)

**ACTIVITY TITLE:** \_\_\_\_\_ **WORK CONTROL NO.** \_\_\_\_\_

<b>NAME</b>	<b>ROLE &amp; JUSTIFICATION FOR BEING SELECTED ON TEAM OR OTHER COMMENTS</b>

The above personnel have been assigned to the planning team and are adequately qualified to perform their functions.

**RESPONSIBLE MANAGER APPROVAL:**

**NAME (Printed)** \_\_\_\_\_ **SIGNATURE** \_\_\_\_\_ **EXT.** \_\_\_\_\_ **DATE** \_\_\_\_\_

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### APPENDIX 3.7 - INTEGRATED HAZARD ASSESSMENT PROCESS

This section provides guidelines for completing IHAs for radiological, chemical, and industrial hazards likely to be encountered in performing activities at the Site. An IHA is required for work activities that require a High planning level based upon the ASF results.

An IHA of specific activities **Should** be graded, commensurate with the nature of the hazards and potential environmental impacts, to understand impacts from worker interactions with hazards that could be introduced as a result of specific work tasks/activities. This assessment supports the development of integrated work control packages, procedures, or other methods used in developing implementing documents for work.

Hazard assessments are performed at different points and at different levels of rigor during the planning of work to support an activity. The level of hazard assessment is limited in the ASF to a qualitative profiling of hazards. This hazard assessment profile determines the general nature of the work activity hazards, identifies unique or unusual hazards, and determines the expected number of hazards related issues that need to be addressed in planning the work activity. This latter determination is used to assist in the selection of an appropriate work planning process. Once the work planning process has been selected, either qualitative, semi-quantitative, or quantitative hazard assessment techniques will be applied, commensurate with the inherent hazards of the work activity. The assessment should be accomplished by evaluating each step in the work activity, work instruction for workplace hazards, environmental impacts, and for hazards introduced from chosen work methods. Performing a walkdown of the work with the workers who will perform the task most effectively supports this process. The assessment **Should** involve reviewing job steps associated with a task and evaluating radiological and industrial hazards. The assessment **Should** involve managers, engineers, environmental, health, and safety personnel, and workers.

The following discussion provides guidance and information on screening processes to identify the hazards, analyze the hazards, and generally identify the controls to prevent or mitigate the hazards posed by the activities under consideration.

Site activities require commensurate controls to prevent or mitigate the impacts/hazards posed by the activities. Some activities (e.g., those that pose significant nuclear or radiological hazards) require a rigorous control set, as provided by nuclear safety AB documents such as a SAR, Basis for Interim Operations, or Basis For Operations, and Environmental Checklist.

Activities that do not pose a nuclear or radiological hazard still require a graded control set, but do not require a nuclear safety AB if they are not conducted within a nuclear facility. Activities in this latter category do, however require a graded hazards analysis to be performed, or to have been performed. Also, the impact of hazards for these activities upon nuclear activities or facilities needs to be identified and assessed.

Hazards analyses and controls development in both of the above instances are graded to:

- The relative importance to safety
- The magnitude of any hazard involved
- The programmatic mission and particular characteristics of the facility, including regulatory compliance requirements
- The verified design basis documentation available
- Environmental impact

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## APPENDIX 3.7 - INTEGRATED HAZARD ANALYSIS PROCESS

### HAZARD ASSESSMENT TOOLS

Once hazards and impacts have been identified and assigned to the appropriate Site infrastructure personnel, the individual will use programmatic-specific standards based hazard assessment tools (procedures) to evaluate the impact of the hazard, the interaction of the hazard on other programs/activities, and the appropriate controls needed to address the hazard. However, these individual evaluations must then be reviewed together by the team to determine if:

- There are conflicting hazards or impacts
- There are any synergistic impacts from the hazards that could cause additional hazards or impacts
- The control set can be integrated and does not conflict with one another
- The control set can be implemented

Many variations of assessment techniques exist and are used in evaluating hazards. These techniques help identify conditions or faulty procedures or processes that could lead to accidents, injuries, property damage, or environmental impact. However, regardless of the variation in available tools, each hazards assessment process tool or technique provides the following elements:

- Work Activity Definition
- Characterization, Categorization, and Classification of Hazards/Impacts
- Identification of Scenarios of Concern
- Evaluation of Consequence
- Identification of Controls to Prevent and Mitigate Hazards
- Documentation of the Assessment

Site infrastructure programs use several different techniques to conduct hazards/impact assessments. Table A3-2, Site Hazard Assessment Tools and Techniques, identifies those techniques, where they reside within the site's infrastructure programs, and their purpose or regulatory driver. The level of effort and techniques used to perform an integrated hazard assessment will vary, depending on the complexity of the disposition project work scope and the hazards present. For each technique listed, the purpose and application, as well as a reference to additional information for each technique, is provided. For purposes of performing an IWCP hazard assessment, the JHA is the only approved hazard analysis method. The Job Safety Analysis tools and techniques described in Table A3-2 may be used to assist in preparing the JHA/IHA. Controls identified during efforts described in Table A3-2 must be documented in the JHA/IHA. The JHA meets the requirements and is considered equivalent to completing hazard analyses identified/required in other site documents.

### APPENDIX 3.7 - INTEGRATED HAZARD ANALYSIS PROCESS

**Table A3-2 Site Hazard Assessment Tools and Techniques**

<b>Tool/Techniques</b>	<b>Infrastructure Program(s)</b>	<b>Purpose / Driver</b>
As Low as Reasonably Achievable Review (ALARA)	Radiological Protection	Used for assessing Radiological hazards only. Some DOE facilities have extended the ALARA review to include non-radiological hazards. <i>10 CFR 835</i>
Auditable Safety Analysis	Nuclear Safety/Radiological Protection [for radiological facilities]	A defensible safety analysis (similar to a SAR but with much reduced content and requirements) which is developed for a radiological facility. <i>DOE-EM-STD -5502-94</i>
Criticality Safety Evaluation	Nuclear Criticality Safety	Operations with fissionable materials which pose a criticality accident hazard are evaluated and documented to demonstrate that the operation will be subcritical under both normal and credible abnormal conditions. <i>DOE Order 420.1</i>
Fire Hazard Analysis	Fire Protection Program	Fire hazards analysis for all nuclear facilities, significant new facilities and facilities that represent unique or significant fire safety risks. The conclusions of the fire hazards analysis shall be incorporated in the Safety Analysis Report Accident Analysis and shall be integrated into design basis and beyond design basis accident conditions. <i>DOE Order 420.1</i>
Failure Modes and Effects Analysis	Nuclear Safety	An assessment of each component for its potential modes of failure, effects of failure, and detection methods. May be undertaken before initiating operations or during operations.
Health & Safety Plan	Occupational Safety & Industrial Hygiene; Environmental Compliance and Management	Health and Safety Plan provides a safety analysis, hazard assessment and controls identification for the work activity to be performed. <i>29 CFR 1910.120, Hazardous Waste Operations and Emergency Response.</i>
Hazard and Operability Study	Nuclear Safety	A critical assessment of component capabilities and system configurations. Used in the chemical industry, rigor and formality based upon the level of risk of operation.
Job Safety Analysis	Occupational Health & Safety	Occupational Safety and Health Administration, U.S. Department of Labor, <i>Job Hazard Analysis, OSHA 3071, 1988 (Reprint)</i> An assessment of each step in a job work activity that is undertaken before initiating work activities to identify needed controls or after incidents to identify needed improvements in controls. Variants of this technique are often used in evaluating hazards associated with work packages or for walk-throughs of facility to identify conditions or faulty procedures that could lead to accidents, injuries, property damage, or environmental impact.
Nuclear Safety Authorization Basis Safety Analysis, e.g., NS AB docs including SARs, Basis for Interim Operations, Basis for Operations, FSAs, TSRs, OSRs; Use of Safety Analysis and Risk Assessment Handbook methodology.	Nuclear Safety	Graded approach to assess hazards, analyze accident scenarios, and develop nuclear safety authorization basis controls for Site > or = Hazard Category 3 nuclear facilities. <i>DOE Orders 420.1, 425.1, 5480.21, 5480.22, 5480.23</i>
Environmental Checklist	Environmental Stewardship & Systems	Used for assessing new or modified projects potential subject to issues that may have an impact on the environment.
Integrated Environmental Manual	Environmental Stewardship & Systems	Used to review projects to ensure regulatory drivers have been addressed and required management systems have been incorporated.

### CONDUCTING AN INTEGRATED HAZARDS ASSESSMENT

In order to provide a hazard assessment, an evaluation is needed to determine the selection of an appropriate hazard assessment methodology. Hazard assessments are mainly qualitative and are conducted by a team of workers, using current Site procedures.

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### APPENDIX 3.7 - INTEGRATED HAZARD ANALYSIS PROCESS

A wide range of hazards and potential environmental impacts exists at the Site related to past nuclear weapons component production operations and the current Site closure activities. These hazards range from standard industrial hazards/impacts to unique hazards/impacts associated with storage of nuclear materials and decommissioning of nuclear weapon component production facilities. At the Site, Environmental and Safety & Health programs are tailored to the specific hazards on-Site and are implemented in individual facilities using a graded approach. The graded approach is based upon the facility (a) programmatic mission, (b) magnitude of hazards involved and potential impacts, and (c) relative importance to safety and compliance, as well as the Sitewide infrastructure requirements and regulatory requirements.

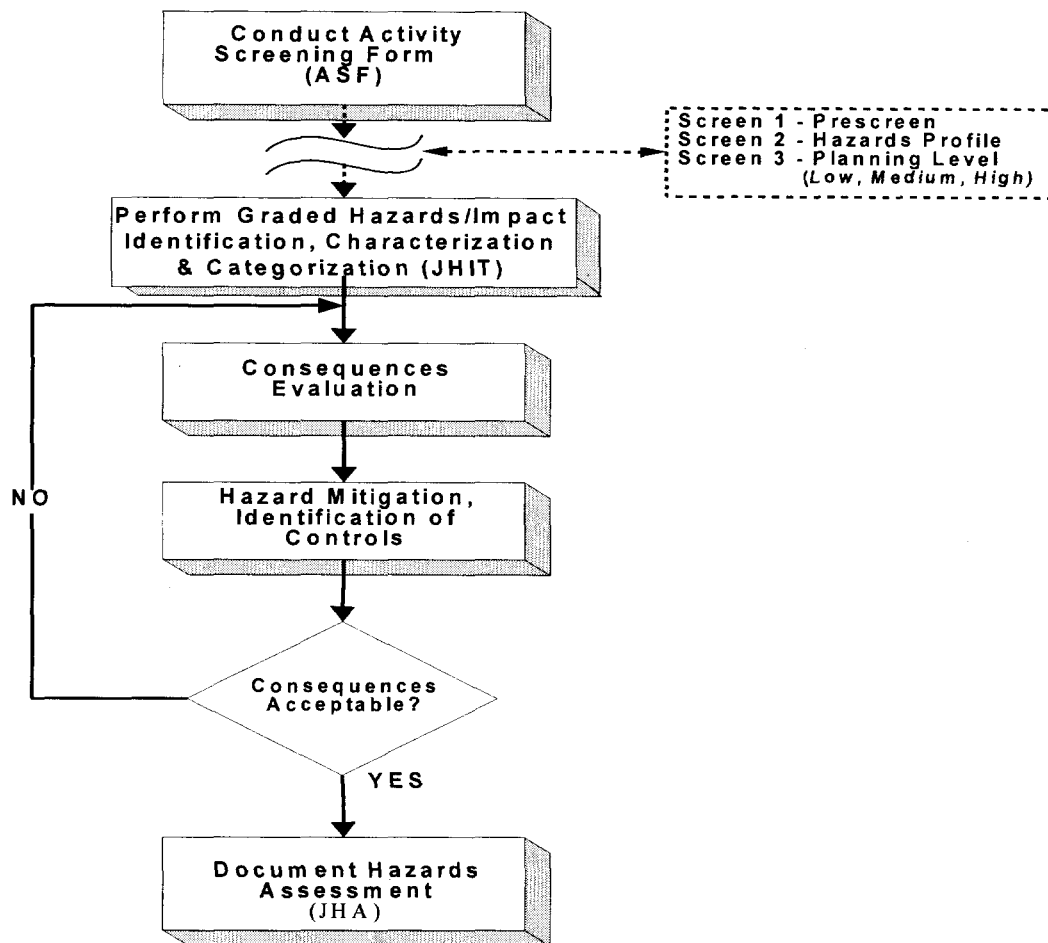
Hazard/impact assessments provide insight on the severity of consequences, an understanding of how controls mitigate or prevent the consequences, and how controls are promulgated into work control documents. Controls identified in the assessment are implemented or changes to the controls are reevaluated for impacts against the original assessment.

It is incumbent on Site RMs to recognize what comprises the safety basis for the Site facilities and activities for which they have line management responsibility. Activities outside a given nuclear facility also need to be evaluated for impact on the Site SAR as well as the AB of that facility. Safety bases for Site facilities and activities are derived in a graded approach, commensurate with the hazards presented for these facilities. Integrated hazard assessments, coordinated between cognizant Site SMEs, are performed to evaluate these hazards. Figure A3-1 depicts the general process flow for developing hazard/impact assessments to support establishing safety controls and safety bases.

**NOTE:** *The Integrated Hazard Assessment process described in this section is intended to satisfy multiple hazard assessment requirements and programmatic drivers from various site safety management programs. The intent is to assess hazards based on information available from work activity hazard identification profile information documented in Screen 2 of the ASF, as well as using knowledge of the work scope for a work activity. These assessments provide a "baseline" of anticipated hazards and their potential consequences.*

## APPENDIX 3.7 - INTEGRATED HAZARD ANALYSIS PROCESS

Figure A3-1 Hazard Assessment Process



The assessment **Should** evaluate radiological (including nuclear and criticality issues), environmental, and industrial hazards, as applicable, using a multi-disciplined team of Site personnel. Furthermore, reviewers **Should** be involved in the early phases of the assessment.

In cases where hazardous substances or conditions are present, analyses **Should** evaluate (1) the type, form, quantity, and concentrations; (2) location; (3) conditions under which hazards could occur; and (4) the hazards' inherent harmful characteristics (for example, toxicity).

The hazards evaluation team determines the consequences of the impacts of normal operations and abnormal events if given controls are not in place. The evaluator has to assess whether or not the identified impacts are within safety basis decision thresholds. If the controls identified do not reduce the potential for the impacts to occur or reduce personnel exposure to the hazards, additional controls are implemented to reduce the consequences to an acceptable level. Iteration on identification of additional controls is required when safety basis decision thresholds are exceeded.

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### APPENDIX 3.7 - INTEGRATED HAZARD ANALYSIS PROCESS

Consequences of interest include those adverse occurrences which threaten the health or safety of the public, the workers, or the environment, the regulatory compliance posture of the Site, or the mission of the facility(s).

Facilities and projects should rely on the existing hazard assessment (includes original/modified environmental checklists and AB safety assessments performed for nuclear facilities) from the previous phase of a facility's life cycle, (as appropriate), as a "baseline" for the work activity when the following conditions apply:

- The assessment was previously approved by the required level of management
- The assessment bounds hazards expected during the planned work activity
- No update of the assessment is needed, that is, it is applicable to the planned activities
- Task hazard analyses are performed for tasks
- Planned tasks and associated hazards are screened against the existing hazard assessment to ensure that the existing hazards assessment and their associated controls are applicable
- No changes have been made to impact the environment or compliance requirements

#### **Activity Identification**

The first step in preparing a hazards assessment is to determine the objective of the work activity(s) which will be covered by the assessment. The operations to be accomplished **Should** be specifically identified along with the areas (locations) in which the operations will be accomplished. [NOTE: This information can exist in a nuclear or non-nuclear facility AB documentation. For example, in SAR, Basis for Interim Operation, Basis for Operations, or Facility Safety Assessment documents; current environmental checklists, or in Project Management Plans, and Health and Safety Plans.]

#### **Hazard Identification, Characterization, and Classification**

The second step is to identify and describe the current hazards/impacts associated with the work activity to take place. The following are examples of information required:

- Hazardous Material Inventories
- Facility Design
- Facility Systems and Components
- Industrial Hazards
- Radiation and Contamination Levels
- Environmental Impacts

#### **Information Gathering**

Information needed for this process includes two levels of detail:

1. Determination of applicable procedures, OSRs, TSRs, SARs, and any other requirements which apply to the activities
2. Characterization of the facility

Baseline data for each project work activity should be collected to support a thorough physical, chemical, and radiological characterization. This baseline data should include:

- Drawings/records reflecting as-built and as-modified condition of the facility
- The current condition of all systems, components, and structures including existing protective barriers and/or modes of operation which could affect (directly or indirectly) the activities being assessed (**may** require walkdowns to cover areas where information is unknown or incomplete)

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## APPENDIX 3.7 - INTEGRATED HAZARD ANALYSIS PROCESS

- The type, form, quantity, and location of regulated wastes, hazardous chemicals, and radioactive materials and of any other physical hazards in the area affected by the work

This step should be thoroughly documented and should include listings of applicable documents and documentation of any pertinent information obtained verbally.

### **Hazards/Impacts Identification**

The objective of this step is to identify any radiological, chemical, environmental, and industrial hazards or impacts which might pertain to the work activity or activities in question. For chemicals and radioactive materials, the types, forms, concentrations, quantities, and locations are identified. Industrial hazards are identified as applicable. Environmental impacts include potential harm to flora and fauna, water and air quality. Any special considerations relating to containment, explosion, fire, reactivity, health, etc. should be identified here.

Once the hazards/impacts are identified, they are screened to determine the appropriate hazard assessment method to be applied. Screening consists of determining the level of hazard which will be addressed or which there is cause for concern. DOE Standard 1027-92, *Hazard Categorization & Accident Analysis Techniques for Compliance with DOE Nuclear Safety Analysis Reports*, provides additional guidance on performing hazard assessments.

### **Estimate Source Terms**

Source terms that bound the magnitude of the hazard or impact (e.g., amount of hazardous chemical, radiation exposure level, potential for release) are then determined. These source terms allow one to define what potential for adverse consequences exists.

### **Identification of Existing Controls**

Administrative controls, physical controls, regulatory/permit controls, and design controls that exist are then determined. Controls could be found in the facility operating basis documentation, such as nuclear facility AB documentation, (e.g., in SARs, Basis for Interim Operations, Basis for Operations), or Facility Safety Assessment documents. Controls for less-than-nuclear-Hazards Category 3 facilities controls are found typically in operational controls, ALARA reviews, ASAs, HASPs, etc.

### **Identification of "Scenarios of Concern"**

Identify the scenarios of concern (for example, spills or fires) that could cause adverse impacts from normal and reasonably expected abnormal events. The evaluator has to keep in mind what would be considered normal and reasonably expected abnormal events or "accidents". An "accident" is defined as an unexpected and undesirable event. The intent in performing the hazard assessment is to identify those normal and/or unexpected and undesirable events that might occur and to assist in identifying those controls necessary to mitigate the potential negative impacts to the health of workers or public or that harm the facility or environment. The evaluator should use a level of sophistication necessary to define the approach for the hazard assessment, keeping in mind the consequences of the event. The following are examples of how the evaluator might approach the hazard assessment:

- Assume no controls in place
- Apply Deterministic approach (assume event will happen) as appropriate
- Move towards a Probabilistic Risk Assessment technique for assessment of very high risk activities

The safety basis decision thresholds will guide the evaluator to the level of sophistication and level of hazard assessment rigor needed to develop the safety basis for the work activity or facility assessed.



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## APPENDIX 3.7 - INTEGRATED HAZARD ANALYSIS PROCESS

### **Scenario of Concern Determination**

Scenario of Concern includes conditions which could adversely affect someone or something. They could be due to normal process-related radiation exposures (which could potentially be averted), potential inhalation of toxic materials due to spills or accidents, environmental damage due to spills or releases, energy sources or other hazard dispersion mechanisms.

All scenarios of concern which could have an adverse impact should be considered in development of safety features to address hazards and accident scenarios.

### **Develop Scenarios**

For adverse effects to occur from an accident, there would be an initiating event which could be accompanied by one or more failures of equipment or personnel. The chain of events which could potentially result in an adverse consequence is called a scenario. A full and complete hazards assessment will include all credible scenarios and their attendant consequences.

Hazard assessments **Should** include considerations of human factors which can influence events or cause events to occur. Work environmental factors that might degrade the reliability of operations personnel in performing tasks should be described and analyzed.

### **Hazard Mitigation Identification**

With the identification of hazards and potential negative impacts, the next step is to identify the necessary and sufficient controls (engineering and administrative) necessary to mitigate the hazards and potential impacts associated with the work activity(s). The hazard assessment evaluator should identify only the necessary and sufficient controls (use of protective clothing, shielding, limit the number of containers handled at any one time, etc.) to be used, relative to the hazards and potential negative impacts associated with the work activity(s). The hazard assessment evaluator **may** solicit other SMEs when decision thresholds are exceeded.

### **Define Controls to Meet Acceptance Criteria**

For those potential impacts which are determined to be unacceptable, additional controls should be proposed to reduce the potential impacts. The scenarios and events then need to be reevaluated to determine if the additional controls will yield an acceptable level of impact (per the acceptance criteria). If the impacts cannot be lowered by the imposition of controls to meet the acceptance criteria, or, if the cost of necessary controls is excessive, document these results and present them to management.

### **Establish Event Trees, As Necessary**

For more complicated scenarios, event trees **Should** be developed which analyze the chain of events described. Assessment of these event trees **Should** include estimation of the probability of each separate event leading to adverse consequences.

### **Consequences Evaluation**

Determine the consequences of the impacts of normal operations and abnormal events given controls are in place. The hazards assessment evaluator has to assess whether or not the identified impacts are within the guidelines. If the controls identified do not reduce the potential for the impacts to occur or reduce personnel exposure to the hazards, additional controls **SHALL** be implemented to reduce the consequences to an acceptable level. Iteration on identification of additional controls is required when guidelines are exceeded.

Consequences of interest include those adverse occurrences which threaten the health or safety of the public, the workers, the environment, or property, the regulatory compliance posture, or the mission of the Site.

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## APPENDIX 3.7 - INTEGRATED HAZARD ANALYSIS PROCESS

### **Hazard Assessment Documentation**

The hazard assessment **Should** be formally documented, including the following minimum documentation, and filed in accordance with approved document control procedures. The following is a list of minimum documentation requirements:

- Unique Hazard Assessment Document Identification Number
- Requester, Evaluator or Assessor, and Independent Reviewer
- Activity Scope
- Requirements Identified
- Assumptions
- Hazard Assessment Methodology Utilized
- Hazard Assessment Checklists, Tables, Reports, etc.
- Scenarios Developed
- Consequences Developed
- Frequencies Determined for Consequences
- Assessment Results
- Comparison to decision thresholds
- Control Measures

Documentation used in the development of results, e.g., hazard assessment checklists, JHAs, Job Safety Analysis, Failure Mode and Effect Analysis, process notebooks, database information, **Should** be retained in a controlled method.

### **CHANGE CONTROL**

Hazard assessments **Should** be updated throughout the duration of the work activity. This involves evaluation of the hazard any time a change in a facility disposition phase occurs. This would include, for example, deactivation to long-term surveillance and maintenance or when there is a change during a life cycle phase (e.g., building support utilities modification or termination during long-term surveillance and maintenance). The hazard baseline is reevaluated to ensure that 1) new hazards or energy sources have not been introduced, and 2) assumptions and commitments associated with the hazard baseline are still valid. If either condition is not true, the hazard assessment **Should** be updated, and all of the subsequent hazard controls examined and modified to ensure that they still provide an adequate and effective level of worker and public protection.

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## CHAPTER 4 – WORK PACKAGE PROCESS

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### 4.1 PURPOSE

This chapter provides the requirements for the development and performance of Type 1 and Type 2 WPs.

### 4.2 SCOPE

Type 1 WPs are used for activities which do not require engineering design packages in accordance with DES-210. These activities are typically repairs, simple environmental remediation, etc. Engineering calculations and input may be used and documented in a Type 1 WP.

Activities requiring engineering design are performed with a Type 2 WP. The purpose behind a Type 2 WP is to integrate the requirements of an engineering design package into a WP. For the development of a Type 2 WP, the intent is for the engineers and planners to coordinate and work together. For a Type 2 WP the planning team **Should** be established prior to starting the design phase. In order for this approach to be effective, a significant amount of coordination between the Engineer, Planner, Foreman/Crafts, and Safety SMEs will be required during the design phase. The basic elements of ISM will be applied throughout the process to ensure the WP is a quality document which can be worked on the floor.

This chapter provides the necessary information to develop and perform Type 1 and Type 2 WPs. Skill-of-the-craft methodology **Should** be used, whenever appropriate, to help streamline the WPs into a more user-friendly document thereby allowing the crafts to focus their efforts where they are needed to ensure safe and efficient performance of work.

### 4.3 INSTRUCTIONS

This section applies to both Type 1 and Type 2 WPs. Although most of the instructions are the same for a Type 1 and a Type 2 WP, the special requirements and considerations for Type 2 WPs are found in Section 4.4.

#### 4.3.1 Work Packages

The Planner, Responsible Organization, engineers, floor level workers, user, and assigned SMEs perform a walkdown of the requested activity. This **Should** be completed concurrently with the completion of the JHIT and development of the JHA and IHA (as required). The walkdown **Should** include inspection of the structures, systems, components and work environment related to the proposed work activity. The level of participation should be graded to the complexity, hazards level, and uncertainty of the task.

The walkdown **Should** be performed by personnel familiar with the area and equipment, SMEs, craftsmen, equipment operators and any other supporting organizations.

The Planning Team **SHALL** refer to appropriate drawings and other technical data before and during the walkdown and review available lessons learned from previous WCDs and from the LL/GI homepage on the Site intranet.

### 4.3.2 WP Development

Each page of the WP **SHALL** include a page number, the work control number, and the current revision.

The sections and appendices identified in Table 4-1 **SHALL** be the format used for all WPs and listed in Section 2. Sections not required **SHALL** be marked N/A in Section 2. Approval of the WP signifies acceptance that these identified sections are not required to perform the work.

The WP **Should** be developed so that the work instructions required at the job site may be removed from the WP during performance of the work as described in Section 4.3.4. Therefore, the WP at the work site may range from the minimum sections and appendices required; to all sections and appendices developed as determined by the planning team.

#### 4.3.2.1 Section 1 - WP Cover Sheet

The Planner **SHALL** develop a WP Cover Sheet per the example in Appendix 4.1. The actual cover sheet may be modified to add organizations to review and approve the package based upon the results of the planning process. Check the appropriate box for a Type 1 or Type 2 WP. The WP title **Should** normally be the same as the Corrective Action Title in Section 3 on the WCF.

Concurrence and approval signatures are obtained in accordance with Section 4.3.3, and closure signatures are obtained in accordance with Section 4.3.8.

#### 4.3.2.2 Section 2 - Table of Contents/List of Effective Pages

The Planner **SHALL** develop a Table of Contents as follows:

- List the required sections and appendix headings exactly as they appear in the WP.
- If the WP does not require a particular section, then list the title of the section and enter N/A instead of a page number for that heading.

**Table 4-1**

#### **REQUIRED WORK PACKAGE SECTIONS/APPENDICES**

<b>Section #</b>	<b>Document</b>	<b>Requirement</b>
Section 1	Work Package Cover Sheet	Mandatory
Section 2	Table of Contents/List of Effective Pages (TOC/LOEP)	Mandatory
Section 3	Work Control Form	Mandatory
Section 4	Engineering Drawings/Specifications	If Required
Section 5	List of Required Drawings and References	If Required
Section 6	Material Requirements	If Required
Section 7	List of Special Tool Requirements/PPE/Training	Mandatory
Section 8	Initial Conditions/Prerequisites	Mandatory
Section 9	Specific Task Instructions	Mandatory
Section 10	Post Maintenance Testing Instructions	If Required
Appendix 1	ASF/JHIT Checklist/JHA	Mandatory
Appendix 2	WP Status Log	Mandatory
Appendix 3	Misc. & Field Generated Paperwork Record	Mandatory
Other Appendices <b>may</b> be added as necessary		

**Table 4-2**  
**OTHER WORK PACKAGE DOCUMENTS**

<b>The following documents or copies SHALL be placed in a Type 2 WP:</b> Engineering drawings, specifications and Bill of Materials as required by the EDP	
<b>The following documents or copies SHALL be placed in the WP as required:</b>	
<ul style="list-style-type: none"> <li>• Confined Space Permit</li> <li>• Energized Electrical Work Permit</li> <li>• Field Generated Data Sheets Record</li> <li>• Hoisting &amp; Rigging Checklist</li> <li>• Powered/Non-Powered Vertical Lift Checklist</li> </ul>	<ul style="list-style-type: none"> <li>• Hot Work Permit</li> <li>• Excavation and Trenching Checklist</li> <li>• Hazardous Material Preparation Checklist</li> <li>• Non-Routine Waste Log</li> <li>• Waste Generating Instructions</li> </ul>
<b>If developed or used, the following documents or copies may be placed in the WP or in an appropriate file location:</b>	
<ul style="list-style-type: none"> <li>• ALARA Job or Design Review</li> <li>• Beryllium Exposure Plan</li> <li>• Environmental Checklist</li> <li>• Guidance Memos</li> <li>• Lead Compliance Plan</li> <li>• List of Required Crafts and Support Personnel</li> <li>• Material Order/Specifications</li> <li>• Miscellaneous Engineering Documents</li> <li>• Pre-evolution briefing</li> <li>• Re-start prerequisites</li> <li>• Site SAR Screening Form</li> <li>• Surveys</li> <li>• Work Package Comments</li> </ul>	<ul style="list-style-type: none"> <li>• Analytical Data</li> <li>• Chemical Order Form</li> <li>• Glovebox Handling &amp; Movement Checklist</li> <li>• Land Disposal Requirements Process Review Worksheet</li> <li>• Lifting Plan</li> <li>• LO/TO Permit</li> <li>• Miscellaneous Documents</li> <li>• Post Job Review Checklist</li> <li>• Respiratory Protection Verification</li> <li>• Safety Evaluation Screen/USQD/JCO</li> <li>• Soil Disturbance Permit</li> <li>• Training Rosters &amp; Requirements</li> <li>• WP DMRs</li> </ul>

#### 4.3.2.3 Section 3 - Work Control Form

The WCF **SHALL** have been entered into the Site WCF database and have a valid work control number. The Planner **SHALL** place a copy of the WCF in the WP.

#### 4.3.2.4 Section 4 - Engineering Drawings/Specifications

The Planner inserts the required engineering drawing and specifications as designated in the engineering design package, if applicable.

#### 4.3.2.5 Section 5 - List of Required Drawings and References

The Planner **SHALL**:

- Prepare a List of Required Drawings and References
- Identify each item by:
  - Reference or drawing number
  - Description
  - Issue date for the revision, Document Change Form

The References Section consists of two subsections, Performance References and Developmental References. The Planner **SHALL** develop Performance References by listing those Standards, Procedures, Instructions, Drawings, etc., which the workers must actually open and use. Performance references, if used, are called out by the individual action steps and **Should** normally be referenced in the WP and not physically included as an Appendix. The use of performance references **SHALL** be minimized by including only those references which the

workers must actually open and use. Developmental references are used in the planning process but are not generally included in the WP. Typical developmental references include vendor manuals, plant drawings, and Site Technical Standards. For Type 2 WPs the Baseline Document Change Form should be reviewed during the development of Section 5.

All reference documents cited in the document are listed in this section. List the date of the latest change or revision on the right side of the page.

#### 4.3.2.6 Section 6 – Material Requirements

**NOTE:** *Bill of Materials/Master Agreement Order Receiving Form/Purchase Requisitions may not be required until after troubleshooting since material will be identified during the troubleshooting process. Therefore, it is permissible to prepare and approve a Type 1 WP without a completed Material Requirements section.*

**NOTE:** *APR-111 requires the Material Acquisition Member to ensure required commodities are obtained from excess material, if available, prior to ordering new material.*

The Planner and Engineer (for Type 2 WPs) **SHALL** ensure that the material required to perform the work activity is documented in this section of the WP.

Material procurement **SHALL** be conducted in accordance with APR-111. The material requirements associated with a WP may be listed on a Purchase Requisition, a Bill of Material or a Master Agreement Order Receiving Form. Purchase Requisition requirements are contained in APR-111. Bill of Material requirements are contained in DES-210. Master Agreement Order Receiving Form requirements are contained in 1-PRO-453, Master Agreement Subcontract Procurement.

Procurement Specifications written in Construction Specification Institute format by a qualified specification writer in accordance with DES-210 may also be included in this section of the WP. Construction Specifications Institute format procurement specifications are required for PL-1 and PL-2 items and **SHALL** be included or referenced in this section when required.

#### Review of Uncertified Items

Items that would be procured as PL-1 or PL-2 but are available on Site from warehouse stock, excess material or other on Site sources **may** be used if the engineer/requisitioner determines that the item is equivalent to the original item. The engineer/requisitioner **SHALL** perform an evaluation that addresses issues such as:

- Is the item the same model and part number and from the same manufacturer?
- Is the item damaged or degraded?
- Is the item suspect or counterfeit?
- Is the item Y2K compliant as required?
  - For information technology systems: System software, hardware and firmware processes date/time data (which may include but is not limited to displaying, recording, sorting, calculating, comparing, sequencing, and representing dates), including leap year dates, before, on, and after January 1, 2000, with no failure, error, interruption, or reduction of functionality.
  - For equipment/parts/items using embedded chip technology: The system or asset will function properly, regardless of the calendar or Julian date which the system or asset may display or process in any manner.

The Responsible Engineering Manager/RM and the QA representative must also concur with the decision. Documentation of the decision and signature of the responsible individuals involved with the decision **SHALL** be recorded in the Work Package Status Log. The APR-111 procedure contains the requirements for PL-1 and PL-2 items.

#### **Review of Non-Identical Replacement Parts for Technical Adequacy**

Items that are not identical replacement parts for Safety Class and Safety Significant items, but are technically adequate, **may** be purchased/used if the engineer determines that the item is technically and functionally equivalent to the original item. The engineer **SHALL** perform an evaluation that addresses issues such as:

- Is the item equivalent in:
  - Physical, mechanical, electrical interfaces
  - Materials of construction
  - Technically and functionally equivalent
  - Pose the same or less risk to human health and/or the environment
  - Failure mode and rate
  - Natural phenomena hazards
  - Supporting documentation (Certificate of Material Test Report, Certificate of Compliance, etc.)

The Responsible Engineering Manager/RM must also concur with the decision. Documentation of the decision and the names of responsible individuals involved with the decision **SHALL** be recorded in an approved engineering calculation.

#### **4.3.2.7 Section 7 - List of Special Tool Requirements/Personal Protective Equipment/Training**

The Planner **SHALL** develop a list of the following:

- List of Special Tool Requirements and Materials, as required
- The PPE, or specified safety equipment which **SHALL** be obtained from the JHA
- Training requirements specific to the job being performed, as required. The training requirements are obtained from the JHA/JHIT and Guide

#### **4.3.2.8 Section 8 - Initial Conditions and Prerequisites**

The Planner develops the WP Purpose and Scope and then the Precautions and Limitations that apply to the WP. For Type 2 WPs the planner **Should** work with the engineer to incorporate applicable prerequisites from the EDP.

Precautions alert document performers to required actions and conditions that represent potential hazards to personnel or possible damage to equipment, or that establish abnormal conditions. Limitations define boundaries that are not to be exceeded. Both precautions and limitations **may** represent hazard controls developed during the JHA process.

The RM **SHALL** determine if the consequences of delaying or canceling work after beginning would have any detrimental safety effects. If detrimental safety effects are possible, the work package **SHALL** contain a contingency statement to perform a review of the effects of the delay or cancellation and modify the WP as necessary to place the work in and keep it in a safe condition. Refer to DES-210 for further guidance for Type 2 WPs.

If work associated with establishing prerequisites is performed in Section 8, then a signature for operations to authorize the work performance **SHALL** be included.

The Planner then develops the Initial Conditions/Prerequisites that apply to the WP based on the JHA. The following **should** be considered in preparing Initial Condition/Prerequisite statements:

- The safety of personnel, the general public, and the environment
- The protection of equipment and material
- Inadvertent, incorrect or omitted actions that could cause system operation, shutdown or could impact TSRs/OSRs
- Limitations identified in approved vendor information and design documents
- Unusual alarms that could occur or are expected to occur as a result of the work
- Actions that could result in automatic shutdown or activation of an engineered safety feature
- The reduction of personnel or environmental exposure to radiation, contamination, electrical shocks, dangerous chemicals, fire hazards, confined spaces, and moving/rotating equipment

Preliminary Actions and Site Preparations are developed that apply to the WP, using the following as a guide:

- Specific training or qualification requirements specific to the WP
- Performance of a pre-evolution brief or Job Task Briefing as required by the COOP Manual
- Review of the applicable Material Safety Data Sheet
- Inventory of required material and material verification
- Any preparatory field activities that are required to be completed before proceeding with the Specific Task Instructions
- Confirming the correct system lineup

If the work will affect the design, function or method of performing the function of a system, structure, or component or impact on TSR/OSR described in the AB, then the Engineer and RM **SHALL** determine the specific remedial actions and reference the applicable AB Document or DOE approved remedial actions. If the required actions are not specified in the AB Document and have not been approved, they must be documented and reviewed by Nuclear Safety and Operations Review Committee, Independent Review Committee, per the *Nuclear Safety Manual* and *Operations Review Requirements*. The Engineering documentation may contain the proposed changes in design performance criteria, function, method of performing the function of a system, structure or component, impact on TSRs/OSRs, systems interactions and potential impact on failure modes. This information will be used by Nuclear Safety to support development of a USQD. The Engineer and the Planner then incorporate the approved remedial actions into the WP.

The WP **SHALL** contain a step for the Job Supervisor to review the training requirements for those hazards identified in the JHA that indicate the "Training Required". Table 1 of the Training Users Manual can be referenced for most of the training requirements.

#### 4.3.2.9 Section 9 - Specific Task Instructions

A signature block for operations to authorize the work performance **SHALL** be included. The Planner develops task instructions that provide:

- Clearly understood text
- Appropriate level of detail
- Concise instruction steps in a logical sequence, using skill-of-the-craft methodology when appropriate
- One action per step



- Coordination of multiple actions
- Where appropriate, **WARNING**, **CAUTION**, or **NOTE**
- Safety controls identified in the JHA where appropriate in the work steps

Specific task instructions are tailored and graded with input from the following as appropriate:

- Maintenance
- Engineering ( For Type 2 WPs the engineer and planner work together to develop specific task instructions.)
- Safety SMEs
- Quality
- Metrology Laboratory
- Other organizations required by the WP

Check-off space **Should** be used instead of signatures for all work steps that do not require witness, inspection, verification points, or data collection. If a signature is required on another type of inspection report, a check-off space **Should** be used to show completion of that step. That step should identify where the signature can be found. Duplicate signatures should be avoided. Examples of when signatures are required include:

- Specific interim and final witness, inspection, or verification points, as identified by Engineering, Safety Discipline, or Quality
- Steps needing inspection, or verification, such as witness points and verification of activities, or data collection
- Identification of steps that could initiate an equipment shutdown or transient or the initiation or interruption of any process action
- Identification of steps that inform the operations personnel of expected alarms or equipment operations
- Specific radiological control hold points, as identified by Radiological Safety
- Authorization of activities that are cited or credited in AB documents
- Control of Radioactive Sources

Each step that implements an administrative control from a Criticality Evaluation **SHALL** be identified with the circle CS symbol (CS) to the left of the step number.

If the required actions are not specified in the AB Document and have not been approved, they must be documented and reviewed by Nuclear Safety.

For passive design features (i.e., tertiary confinement) where a post maintenance test (PMT) is not feasible, adequate inspections **Should** be conducted and documented in the section referenced during/after construction to verify key design performance criteria are met.

#### 432.10 Section 10 – Post Maintenance Test Requirements

If post maintenance test (PMT) work activities are required then a signature block for operations to authorize the work performance **SHALL** be included. Engineering, the RM, Maintenance and the Planner together develop post maintenance test requirements, which provide the following:

- Purpose describing the intent of the PMT
- Precautions and limitations specific to the PMT

- Prerequisites specific to the PMT
- Task instructions specific to the PMT
- PMT acceptance criteria and verification

For passive design features (i.e., tertiary confinement) where a PMT is not feasible, adequate inspections **Should** be conducted and documented in the section referenced during/after construction to verify key design performance criteria are met.

The Planner **SHALL** develop steps to compare the work accomplished with the PMT or inspection performed to determine that all work is acceptable prior to returning the equipment or system to normal service per COOP, if required.

#### 432.11 Work Package Appendices

The Planner develops the following Appendices, as required by the requested activity:

- Appendix 1 – ASF, JHA, and JHIT (includes ALARA reviews and other safety related documents). **Required for all WPs.**
- Appendix 2 - WP Status Log (The WP status log provides an area of the WP for the foreman/supervisor to record work status and may be used by the foreman/supervisor to record any relevant information regarding the work.) **Required for all WPs.**
- Appendix 3 - Miscellaneous/Field Generated Paperwork Record Sheet (for example, Facilities Inspection Report, Material Certification Tags, SES, USQD, applicable MSDS, required permits and checklists) **Required for all WPs.**
- Review Comment Sheet(s)
- PJR Checklist
- Pre-Evolution Briefing Record in accordance with COOP
- Applicable Lessons Learned to discuss at the pre-evolution briefing
- Work Package Revision Request, as needed
- Non-routine Waste Origination Log prepared in accordance with Instructions
- WP Re-Start Prerequisites **may** be inserted when needed
  - Re-start prerequisites consist of those steps from Section 8 of the WP that are to be performed prior to authorizing work to be restarted after an unforeseen work stoppage
  - SM, RM, or the Job Supervisor update the WP Status Log to include comments about the progress of work, shift turnover, work stoppage, emergency actions, WP recovery steps, and actions which are required to place the work site in a safe condition
- Other pertinent information, drawings, sketches, or procedures
- High planning level tables and forms, per Chapter 3
- Any permits/checklists required to perform the work as required

#### 4.3.3 Concurrence and Approval

The Planner and RM **SHALL**:

- Sign and date the WP cover sheet
- Obtain comments and concerns from representatives of the required organizations
- Ensure that the changes are reviewed and concurred with by the affected organizations if a change, other than administrative or editorial, is made to the WP after any concurrence signatures are obtained

- Obtain signatures from representatives of the organizations identified in ASF Screen 2, and those designated as “Required” in the JHIT performed in Chapter 3; these signatures **SHALL** be documented on the Cover Sheet

For Type 2 WPs, concurrence and approval for the design portion (EDP), **SHALL** be performed in accordance with the requirements outlined in DES-210 and **SHALL** be completed prior to the approval of the Type 2 WP.

Concurrence/Approval Signatures indicate satisfaction by the signing organization that the WP contains sufficient analysis, documentation, and safety controls to satisfy the criteria of the graded approach concept with respect to the scope of the work and that the safety controls have been properly implemented. They also indicate approval of any deviations from normal practices or procedures identified in the WP and that Sections that have been marked N/A are appropriate.

If a SES or USQD is required, then the RM **SHALL** submit the WP (and EDP for Type 2 WP) for screening and place the SES in an appendix of the WP before issuing for work.

Screen the WP to determine if a PRC/ORC review is required in accordance with *Operations Review Requirements*.

The RM **SHALL** sign and date the cover sheet when all requirements for the approval are met.

#### 4.3.4 Conduct of Work

The organization(s) performing the WP **SHALL** comply with the requirements of the COOP manual for conduct of work and procedural compliance. The hazards and controls identified in the JHA and applicable LL/GI **SHALL** be reviewed as part of the pre-evolutionary brief.

Prior to commencing work, the RM **SHALL** screen the activity using the ASF in accordance with Chapter 2, each time the WP is used. (It is anticipated that all 3 questions in Screen 1 of the ASF will be answered Yes, thereby requiring no further documentation.)

The RM **may** remove any documents deemed necessary to be used at the work site and return them to the work package after the completion of the work. The work instructions **SHALL** be kept at the work site, unless there is a documented reason not to, such as contamination, confined space, environmental factors, etc. If the work instructions are not at the work site, and there are steps requiring; a) sign-off/validation, b) they must be performed in order, or c) they must be performed exactly as written, then the workers must be in communication with someone who can read the work instructions to them. Working copies of the work instructions **may** also be used and any information, such as data or signatures can be either transferred into the work package or the original pages **may** be replaced with the working copy.

Upon completion of the WP, the Job Supervisor **SHALL** perform a PJR in accordance with the requirements stated in Chapter 10.

#### 4.3.5 Periodic Review Requirements for Approved WPs

It is not necessary to perform a periodic review every 90 days if the WP is not scheduled to be worked. The periodic review should only be performed prior to releasing the WP to the responsible organization for work performance.

If the work activity has not commenced within 90 calendar days of the RM approval on the WP Cover Sheet, or if the work activity has been delayed for a period of 90 calendar days or longer, then resubmit the WP to Planning for review.

**The Planner SHALL:**

- Review the WP for any changes that impact the work conditions, processes, type of equipment, hazards, and hazard controls as described in Sections 8, 9, or 10 of the WP
- Review Section 5 of the WP for any changes to the references listed or new requirements which could impact the requested work in Sections 8, 9 or 10 of the WP (i.e., OS&IH, RadCon Manual, etc.)
- Upon completion of the review, enter name, signature and date in the WP status log indicating that a 90 day review was completed
- If the review determines that changes do impact the requested work, then process changes per Section 4.3.6

#### **4.3.6 Revisions and Changes**

##### **4.3.6.1 Revision and Change Determination**

For those changes where the scope, design intent (including all Type 2 Engineering Change Requests), or hazard controls have changed, a new ASF **SHALL** be performed in accordance with Chapter 2, and a new JHIT and JHA **SHALL** be performed in accordance with Chapter 3.

The Initiator **SHALL** process a WP Revision Request in accordance Appendix 4.2, if the requested change affects any of the following:

- The scope or intent of the job
- Hardware important to criticality safety, the intent of the SES/USQD, or an AB Document or OSR/TSR
- A hazard control measure identified on the JHA or in the WP (e.g., ALARA review, RWP)
- System/component model number, material specification (that does not meet original fit, form or function as determined by Engineering), material certification or test data, or system component configuration
- Hold points, inspections, verifications and witness signoffs

Otherwise, the change is processed per Section 4.3.6.3.

##### **4.3.6.2 Instructions for Completing WP Revision Request**

Changes to information derived from the EDP (i.e., drawings, specifications, instructions, etc.), **SHALL** be changed in the EDP in accordance with DES-210 prior to changing the WP. The WP Revision Request form can be found in Appendix 4.2. The form can be generated by the individual requesting the change, but is normally processed by the planner. The actual cover sheet may be modified to add organizations to review and approve the package based upon the results of the planning process (ASF and JHIT). The WP Revision Request is completed as follows:

**The Originator SHALL:**

- Complete the Originator section
- Enter a description of the requested change(s) on the WP Revision Request or on additional sheets that:
  - Include pages to be added to the WP, if required
  - Provide additional steps with required signatures at the appropriate locations in the body of the WP
  - Indicate reason for change(s)

- Enter name, signature and date, and forward the completed WP Revision Request to the responsible Planner

The Planner **SHALL** verify the information on the WPRR; confirm the change is valid and necessary; and complete the WPRR as appropriate (if disapproved, indicate the reason); and:

- Enter name, signature, and date
- Obtain original WP and prepare a revised WP including new pages and incorporate previous pen and ink changes
- Obtain concurrence and approval signature in accordance with Section 4.3.3, Concurrence and Approval
- Indicate the revisions on every affected page by:
  - Drawing a vertical line in the right hand margin next to the change
  - Entering the revision number
  - Initialing and dating the change
- Retain the cover sheet and all pages replaced in a WP as a result of a revision in the work package history file or with the package in a separate Appendix and marked as *Superseded*
- Log the WP Revision Request in the WP Status Log

#### 4.3.6.3 Pen and Ink, and Page Changes

Use Pen and Ink changes for minor items that do not meet the requirements of a revision. Use of correction fluid or correction tape is not allowed. Changes to information derived from the EDP (i.e., drawings, specifications, instructions, etc.), **SHALL** be changed in the EDP in accordance with DES-210 prior to changing the WP.

*Pen and Ink changes SHALL be reviewed and concurred with by the affected organization(s) and documented in the WP status log.*

Pen and Ink changes are made as follows:

- Draw a single line through the entry to be changed
- Make the desired entry into the WP
- Draw a vertical line in the right-hand margin next to the change
- Initial and date the change
- Record change, concurrence, and reason in the WP Status Log for WPs

If the Pen and Ink change requires a page change:

- Replace original pages with revised pages
- Insert additional pages, as required
- Mark removed pages as *SUPERSEDED* and place in miscellaneous field generated appendix

#### 4.3.7 Cancellation

The Responsible Organization **may** cancel approved, in progress WPs in accordance with this section.

Prior to canceling a work package, the Planner **SHALL**:

- Ensure that the cancellation does not adversely affect an existing Plant Action Tracking System item or technical direction
- Ensure that the cancellation does not impact a regulatory requirement, decision, or agreement

- Review the current status of work
- Add additional task steps, through the revision process, to the WP to secure the job site as required
- Cancel material orders as applicable
- Cancel and date the WCF

#### 4.3.8 Closure

The Job Supervisor **SHALL**, within 90 days of completion of work:

- Ensure all required documents are properly filled out and contained in the WP
- Ensure work, inspections, Engineering dispositions or Nonconforming Conditions, and testing required by the WP are completed and indicated in the WP
- If outstanding deficiencies are noted during the WP closure, which are **not** covered in the original scope of the WP, notify the RM for proper disposition
- Complete the Job Supervisor closure section of the WP Cover Sheet
- Issue a new WCF in accordance with Chapter 3 for all new or remaining open deficiencies
- Ensure all work and testing specified in the WP has been completed satisfactorily and documented in the WP as required

If a WP is written to address a Non-Conformance Report, then Engineering **SHALL** perform an operability assessment on components or systems prior to returning to service.

Engineering **SHALL** verify the following are completed and then complete the Engineering closure signature line of the WP Cover Sheet, as applicable:

- A post modification walkdown to redline drawings has been performed
- Redlines have included all administrative clarifications, minor design changes, and Engineering Change Request field changes per the DES-210
- Redlined excerpt controlled drawings have been delivered to Site Design Document Control
- After the above have been performed, complete the Engineering closure signature line on the WP Cover Sheet

**NOTE:** *Redlines must include all administrative clarifications, minor design changes, and Engineering Change Request field changes per DES-210.*

Quality Assurance **SHALL** ensure that required signatures and documents are included in the WP, requiring Quality Assurance concurrence per Chapter 3, and verify that:

- When required, a PMT is performed and documented
- Acceptance criteria are met
- A non-conformance report has been submitted and dispositioned in accordance with approved procedures to resolve hardware/testing problems, as required
- Verify the completed WP meets the requirements for a quality record, in accordance with *Records Management Guidance for Records Sources*
- Verify that all quality records are complete and reflect the work performed
- Complete the Quality closure signature line of the WP Cover Sheet, as applicable

The RM then reviews the WP to ensure that all required reviews are complete and the required signatures are on the WP Cover Sheet, and approves WP closure by signing the closure section

of the WP Cover Sheet. They **SHALL** then ensure that the WCF is closed in the database and the WCF is signed.

#### **4.4 Type 2 Work Package**

##### **4.4.1 Type 2 Work Package Summary:**

The Type 2 WP will be the same format as a Type 1 WP and all necessary prerequisites, initial conditions, work instructions, drawings, and post maintenance testing required by the design package incorporated into the Type 2 WP. Type 2 WPs also follow the Type 1 WP process for changes, revisions, and closure (i.e., Sections 4.3.1 through 4.3.8).

##### **4.4.2 Initial Planning & Design Phase**

The RM **SHALL** review the scope for the requested work identified on the WCF or project. If the scope is not sufficient, develop a more detailed scope to ensure the planning and design phase will be adequately performed. This is also an essential element of the Site's ISM system, and the foundation for the success of the entire project. Much of the outcome of the design is based on the initial scope given to the Engineer. For construction projects, this is also essential in the bidding process, so every effort should be made to ensure the scope is sufficient and detailed enough to begin this process. An ASF **SHALL** be performed prior to initiating design per DES-210. A JHIT **SHALL** be performed early in the design phase to assist in identifying hazards and allowing engineered safety features to be developed to control the hazards.

An engineering walkdown of the requested activity is performed by engineers, planners, SMEs and crafts (if available). This **may** be completed concurrently with the development of the JHIT/JHA. DES-210 provides instructions for conducting a walkdown for the design. The JHA **SHALL** be completed prior to approval of the WP and may be completed before or after completion of the EDP.

The Planning Team **SHALL** refer to appropriate drawings and other technical data before and during the walkdown and review available lessons learned from previous WPs and from the LL/GI homepage on the Site intranet.

##### **4.4.3 WP Development**

A Type 2 WP is essentially a Type 1 WP integrated with the design. The elements such as JHA, work scope definition, precautions and limitations, prerequisites, special tools, work steps, hold points, etc., are developed as described previously. The difference is that the planner works closely with the engineer to include the design elements necessary to perform the work in the WP.

To accomplish this, DES-210 is to be used for developing the engineering design portion of the package. The EDP will contain any detailed work instructions necessary to properly perform the design. These detailed work instructions for the execution of the work will be incorporated into the WP work instructions as described in this Chapter. The engineering specifications may contain the work steps as required to complete the project. It **Should** be decided in the project planning stage if specifications will include specific work steps. As previously indicated, an ASF, JHIT, and JHA **SHALL** be completed as part of the planning process for the work package.

**APPENDIX 4.1 - WORK PACKAGE COVER SHEET**

<b>ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE</b> <b>WORK PACKAGE-COVER SHEET</b>			
<b>Type 1</b> <input type="checkbox"/>			<b>Type 2</b> <input type="checkbox"/>
WORK CONTROL NO. _____ REVISION NO. _____ E.O. Number: _____			
TITLE: _____			
Planner: _____ / _____ / _____ <div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>			
<b>CONCURRENCE:</b>			
Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, can be performed safely and contains all of the required controls from the JHA.			
Responsible:	_____ / _____ / _____		
Organization	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
Facility Mgr.:	_____ / _____ / _____		
(or designee)	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
H&S:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
Engineering:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
RAD:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
Crit Safety:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
Nuc Safety:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
Environmental:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
Fire Protection:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
Quality:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
ORC/PRC:	_____ / _____ / _____		
(Review Only)	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Initials</span> <span>ORC/PRC Meeting No.</span> <span>Date</span> </div>		
<b>APPROVAL:</b>			
Responsible:	_____ / _____ / _____		
Manager (Rep)	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
<b>CLOSURE CONCURRENCE:</b>			
Based upon my personal review of this work package and inspection of the work site, all of the work and retest specified in this package has been satisfactorily completed.			
Job Supervisor:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
Engineering:	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
Quality	_____ / _____ / _____		
	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		
<b>CLOSURE APPROVAL:</b>			
Responsible:	_____ / _____ / _____		
Manager (Rep)	<div style="display: flex; justify-content: space-between; width: 100%; font-size: small;"> <span>Name</span> <span>Signature</span> <span>Date</span> </div>		



**APPENDIX 4.2 - WORK PACKAGE REVISION REQUEST**

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE  
WORK PACKAGE REVISION REQUEST**

Page 1 of 2

STANDARD WORK PACKAGE SERIAL NUMBER: \_\_\_\_\_  
WORK CONTROL NO. \_\_\_\_\_ REVISION NO. \_\_\_\_\_

TITLE: \_\_\_\_\_

DESCRIPTION AND REASON FOR REQUESTED CHANGE(S):

Originator: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

**REQUEST DISPOSITION:**

\_\_\_\_\_ Request Approved

\_\_\_\_\_ Request Disapproved

Reason for Disapproval:

Planner: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

**CONCURRENCE:**

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, can be performed safely and contains all of the required controls from the JHA.

Responsible: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Organization Name Signature Date

Facility Mgr.: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
(or designee) Name Signature Date

H&S: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Engineering: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

RAD: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Crit Safety: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Nuc Safety: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Environmental: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Fire Protection: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Quality: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

ORC/PRC: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
(Review Only) Initials ORC/PRC Meeting No. Date

**APPENDIX 4.2 - WORK PACKAGE REVISION REQUEST**

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE  
WORK PACKAGE REVISION REQUEST**

Page 2 of 2

WORK CONTROL NO. \_\_\_\_\_ REVISION NO. \_\_\_\_\_

**APPROVAL:**

Responsible: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Manager (Rep)      Name      Signature      Date

**SWP USE AUTHORIZATION:**

If SWP used for TS&R work, signature indicates that specific limitations and boundaries on repair activities have been clearly identified. Use of this SWP is authorized for the work specified by the WCF contained herein. Work must be started within 90 calendar days.

Responsible: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Manager (Rep)      Name      Signature      Date

**CLOSURE CONCURRENCE:**

Based upon my personal review of this work package and inspection of the work site, all of the work and retest specified in this package has been satisfactorily completed.

Job Supervisor: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
                                 Name      Signature      Date

Engineering: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
                                 Name      Signature      Date

Quality \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
                                 Name      Signature      Date

**CLOSURE APPROVAL:**

Responsible: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Manager (Rep)      Name      Signature      Date

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## CHAPTER 5 – STANDARD WORK PACKAGE PROCESS

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### 5.1 PURPOSE

The purpose of this chapter is to provide the requirements for the development and/or performance of the SWP.

### 5.2 SCOPE

The SWPs **may** be used for those work activities that are repetitive in nature. The SWPs should not be used as a mechanism to circumvent the IWCP process, but should be used for specific repetitive work activities, that is, SWPs should not be developed to trouble shoot and repair (TS&R) all electrical within a facility because the hazards, safety and compliance controls, and work conditions are different throughout the facility, but may be used for a specific electrical system. SWPs for TS&R are intended to identify and correct unknown deficiencies and repair them, if the deficiency is known, a Type 1 or 2 WP **SHALL** be used. SWPs **may** be developed to perform repetitive maintenance actions on systems or components in all buildings on the Site that meet the scope of the SWP and to perform projects that cover more than one operations area/company. If a SWP is used, then a JHIT/JHA specific to the scope of work **SHALL** be conducted in accordance with Chapter 3, prior to performing the work defined by the SWP. If additional safety and compliance controls are identified that were not included in the SWP, then the SWP **SHALL** be modified in accordance with Section 4.3.6.

Prior to developing a new SWP, the RM **SHALL** review the scope of existing SWPs to determine if an existing SWP is adequate to perform the requested work identified on the WCF.

The RM **SHALL** keep the original SWP after approval. Working copies of the SWP **SHALL** be used for performance of the work.

The Planner, Responsible Organization, engineers, floor level workers, user, and assigned SMEs perform a walkdown of the requested activity. This **Should** be completed concurrently with the completion of the JHIT and development of the JHA and IHA (as required). The walkdown **Should** include inspection of the structures, systems, components and work environment related to the proposed work activity. The level of participation should be graded to the complexity, hazards level, and uncertainty of the task

The walkdown **Should** be performed by personnel familiar with the area and equipment, SMEs, craftsmen, equipment operators and any other supporting organizations.

The Planning Team **SHALL** refer to appropriate drawings and other technical data before and during the walkdown and review available lessons learned from previous WCDs.

A SWP **SHALL** be developed according to the instructions and format in Chapter 4 for developing a Type 1 WP, except for closure of the WCF after SWP development. Additionally, the instructions for revisions, pen and ink changes, reviews, cancellation, and closure are the same as for a Type 1 WP, described in Chapter 4. The following specific instructions apply to the development of SWPs.

### 5.3 Instructions for SWP usage

The Planner **SHALL**:

- Identify specific limitations and boundaries of work allowed under the SWP
- Perform a JHIT/JHA to the specific boundaries of work under the SWP

The Responsible Manager **SHALL**:

- Ensure WCF is completed for SWP usage
- Ensure SWP clearly identifies specific limitations on activities and boundaries and safety controls from the JHA prior to approving and issuing an SWP

#### 5.3.1 Instructions for Preparing a SWP for TS&R

These specific instructions apply to the development of SWPs to be used for TS&R activities:

The Planner **SHALL**:

- Perform a JHIT/JHA to the specific boundaries of repair under the TS&R SWP
- Identify anticipated hazards and associated safety and compliance controls
- Identify potential permit requirements (e.g., confined space , energized electrical)
- Identify specific limitations and boundaries of repair work allowed under the TS&R SWP

The Responsible Manager **SHALL**:

- Ensure WCF is completed for SWP usage
- Ensure SWP clearly identifies specific limitations on repair activities and boundaries and safety controls from the JHA prior to approving and issuing a TS&R SWP
- Ensure that this activity will not result in a temporary or permanent modification.

#### 5.3.2 Instructions for Completing SWP Cover Sheet

**NOTE:** *The format of the serial number is SWP-NN-XXXXX-XX where NN is the appropriate company number, building number, or RFETS for site-approved SWPs; XXXXX is a sequential number; and XX is the revision number.*

The actual cover sheet (Appendix 5.1) for the package may be modified to add organizations to review and approve the package based upon the results of the planning process.

The Planner **SHALL**:

- Obtain the next sequential number, and record on the Cover Sheet.
- Develop the SWP Cover Sheet by entering the following information:
  - Work Control Number from the applicable WCF
  - WP Title
  - Revision Number
  - Planner's Name
  - Include additional concurrence requirements, as required

Concurrence and approval signatures are obtained in accordance with Section 4.3.3. If after the JHIT/JHA is conducted prior to releasing the SWP for work, additional concurrence signatures are required from the JHIT, then the Planner/Job Supervisor **SHALL** obtain the additional concurrence signatures prior to conducting the work. Closure signatures are obtained in accordance with Section 4.3.8, Closure.

**APPENDIX 5.1 - STANDARD WORK PACKAGE COVER SHEET**

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE  
STANDARD WORK PACKAGE COVER SHEET**

STANDARD WORK PACKAGE SERIAL NUMBER: \_\_\_\_\_

WORK CONTROL NO. \_\_\_\_\_ REVISION NO. \_\_\_\_\_

TITLE: \_\_\_\_\_

Planner: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

**CONCURRENCE:**

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, can be performed safely and contains all of the required controls from the JHA.

Responsible: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Organization Name Signature Date

H&S: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Engineering: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

RAD: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Crit Safety: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Nuc Safety: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Environmental: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Fire Protection: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Quality: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

ORC/PRC: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
(Review Only) Initials ORC/PRC Meeting No. Date

**APPROVAL:**

Responsible: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Manager (Rep) Name Signature Date

**SWP USE AUTHORIZATION:**

If SWP used for TS&R work, signature indicates that specific limitations and boundaries on repair activities have been clearly identified. Use of this Standard Work Package (SWP) is authorized for the work specified by the Work Control Form contained herein. Work must be started within 90 calendar days.

Responsible: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Manager (Rep) Name Signature Date

**CLOSURE CONCURRENCE:**

Based upon my personal review of this work package and inspection of the work site, all of the work and retest specified in this package has been satisfactorily completed.

Job Supervisor: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Engineering: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Quality: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

**CLOSURE APPROVAL:**

Responsible: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Manager (Rep) Name Signature Date

## CHAPTER 6 – WORK PLANS & PROCEDURES

### 6.1 PURPOSE

The purpose of this chapter is to provide the requirements for the development and/or performance of the WP&P.

### 6.2 SCOPE

Although the development and use of WP&Ps is not new to this Site, the integration within the IWCP process is new to most of these processes described. The reason for this integration is to ensure that the IWCP encompasses ALL work accomplished onsite. Table 6-1 below describes the WP&Ps that are governed by this chapter. Also provided in Table 6-1 are the additional governing documents that **SHALL** be followed as applicable for the process and WP&P described. The WP&Ps described in Table 6-1 **may** be used as stand-alone documents for their respective process, and do not need to be included and controlled additionally in another WP.

Table 6-1

PROCESS	WP&P	ADDITIONAL GOVERNING DOCUMENT
Routine, recurrent technical operations	Technical Procedures	MAN-001-SDRM, PRO-815-DM-01, INS-816-DM-02
Temporary technical operations	Technical Operations Orders	MAN-066-COOP
CERCLA Investigations	Work Plans, Sampling and Analysis Plans, Health and Safety Plans, Reconnaissance Level Characterization Plans, Final Survey Plans, Project Execution Plans, Quality Assurance Program/Project Plans, Remedial Investigations, Feasibility Studies	CERCLA guidance (EPA/540/G-89/004, OSWER Directive 9355.3-01), RFCA IGD, Decommissioning Program Plan, Facility Disposition Program Manual, DOE Order 414.1A, 10CFR 830.120
CERCLA Actions	Field Implementation Plans, Health and Safety Plans, Sampling and Analysis Plans, Proposed Action Memorandum, Quality Assurance Program/Project Plans, Interim Measure/Interim Remedial Action, RFCA Standard Operating Protocols	CERCLA guidance (EPA/540/G-89/004, OSWER Directive 9355.3-01), RFCA IGD, Decommissioning Program Plan, DOE Order 414.1A, 10CFR 830.120
RCRA Actions	Closure Description Document, Site Hazard Assessment Plans, Final Survey Plan, RCRA Facility Investigation, Corrective Measure Study	RCRA, DOE Order 414.1A, 10CFR 830.120, RCRA Part B Operating Permit
Emergency Preparedness Drills and Exercises	Drill Package, Exercise Package	EPLAN-97; I-A35-5500-12.01, 4-A36-5500-12.02, RCRA Part B Permit
Security Force Operations	Performance Test & Exercise Plans	I-0102M, WSLIC Performance Test Manual

### 6.3 INSTRUCTIONS

#### 6.3.1 Initial Work Plan & Procedure Development Phase

The RM and WP&P Developer review the scope for the requested work identified on the WCF. If the scope is not sufficient, develop a more detailed and concise scope to ensure the WP&P development will be adequately performed. It is essential to ensure the scope is adequate to conduct the development phase of the WP&P. This is also an essential element of the Site's ISM system, and the foundation for the success of the entire project.

**NOTE:** *Every effort should be made to ensure the crafts and/or operators performing the work are active participants in the walkdown and development process.*

The Planning Team performs a walkdown of the requested activity. This should be completed concurrently with the development of the JHIT/JHA in Chapter 3.

Walkdowns **Should** be completed in a team environment and include:

- Personnel familiar with the area and equipment
- SMEs for the applicable environmental, safety, or management programs
- Craftsmen and equipment operators
- Any other supporting organizations

The Planning Team **SHALL** refer to appropriate drawings and other technical data before and during the walkdown and review available lessons learned from previous WP&Ps and from the LL/GI homepage on the Site intranet.

A JHIT/JHA **SHALL** be performed in accordance with Chapter 3 and retained in the WP&P history file. The location of the history file is determined by the Responsible Manager in accordance with the appropriate additional governing document listed in table 6.1.

### 6.3.2 WP&P Development

The WP&P Developer develops the WP&P using the format described in the additional governing document described in Table 6-1. All of the safety and compliance controls identified in the JHA **SHALL** be incorporated into the appropriate section of the WP&P (precautions, limitations, work steps, etc.).

If the work will affect the design, function or method of performing the function of a safety system, structure or component or TSR/OSR described in the safety analysis or other information relied on as the AB, then the RM determines the specific required action and references the applicable AB Document or DOE approved required actions.

If the required actions are not specified in the AB Document and have not been approved, they must be documented and reviewed by Nuclear Safety and the Operational Review Committee (ORC)/Independent Review Committee.

The WP&P Developer then develops job instructions, based on skill-of-the-craft, identified hazards, and task complexity. Specific radiological control, nuclear safety, criticality safety, health and safety, compliance requirements, hold points, surveillance requirements, post maintenance testing requirements, and return to service requirement as identified by the respective disciplines are incorporated into the WCD. Refer to the *Writing Instruction Guide* for guidance.

### 6.3.3 Concurrence and Approval

Concurrence and approval **SHALL** be performed in accordance with the following:

- Signatures **SHALL** be obtained from representatives of the organizations designated on the ASF and the organizations required by the JHIT
- The requirements from the "Additional Governing Document" outlined in Table 6-1 for the given process and WP&P **SHALL** be followed



Concurrence/Approval Signatures indicate satisfaction by the signing organization that the WP&P contains sufficient analysis, documentation, and actions to satisfy the criteria of the graded approach concept with respect to the scope of the work.

If an SES or USQD is required, then submit the WP&P for screening and place the SES/USQD in the WP&P history file.

Screen the WP&P in accordance with *Operations Review Requirements*.

When all requirements for approval of the WP&P are met, the RM signs and dates the WP&P.

#### 6.3.4 Conduct of Work

Prior to commencing work, the RM **SHALL** screen the activity using the ASF in accordance with Chapter 2 each time the WP&P is used. (It is anticipated that all 3 questions in Screen 1 of the ASF will be answered Yes for routinely performed plans or procedures, thereby requiring no further documentation.) Use requirements for Technical Procedures are governed by the SDRM. For all other WP&Ps, the WP&P document **SHALL** be kept at the work site, unless there is a documented reason not to, such as contamination, confined space, environmental factors, etc. If the WP&P is not at the work site, and there are steps requiring; a) sign-off/validation, b) they must be performed in order, or c) they must be performed exactly as written, then the workers must be in communication with someone who can read the work instructions to them. Working copies of the work instructions **may** also be used.

**NOTE:** *The organization(s) performing the WP&P will comply with the requirements of the COOP Manual for conduct of work and procedural compliance.*

Upon completion of the WP&P, the Job Supervisor **SHALL** perform a PJR in accordance with the requirements stated in Chapter 10.

#### 6.3.5 Revisions and Changes

For those changes where the scope, design intent, or hazard controls have changed, a new ASF **SHALL** be performed in accordance with Chapter 2, and a new JHIT and JHA **SHALL** be performed in accordance with Chapter 3.

The revision and change process **SHALL** be in accordance with the requirements identified in the "Additional Governing Document" column in Table 6-1.

#### 6.3.6 Closure

The closure process **SHALL** be in accordance with the requirements identified in the "Additional Governing Document" column in Table 6-1.

The RM **SHALL** close the WCF and retain WCF in WP&P history file. This **may** be performed once the WP&P has been approved.

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## CHAPTER 7 - PREVENTIVE MAINTENANCE

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### 7.1 PURPOSE

This chapter describes the requirements for the development of Preventive Maintenance Work Package (PMWP) and the performance of Preventive Maintenance Orders.

### 7.2 DISCUSSION

This process ensures the elements of the Site's ISM system are followed. This process relies heavily on the skill-of-the-craft, but should in no way compromise the safety of the worker or public, or protection of the environment.

### 7.3 INSTRUCTIONS

#### 7.3.1 Development of PMWPs

The Planner, Responsible Organization, engineers, floor level workers, user, and assigned SMEs perform a walkdown of the requested activity. This **Should** be completed concurrently with the completion of the JHIT and development of the JHA and IHA (as required). The walkdown **Should** include inspection of the structures, systems, components and work environment related to the proposed work activity. The level of participation should be graded to the complexity, hazards level, and uncertainty of the task. Hazard controls identified in the JHA **SHALL** be incorporated into an appropriate section (precautions, limitations, work steps, etc.) of the PMWP.

The walkdown **Should** be performed by personnel familiar with the area and equipment, SMEs, craftsmen, equipment operators and any other supporting organizations.

The Planning Team **SHALL** refer to appropriate drawings and other technical data before and during the walkdown and review available lessons learned from the LL/GI homepage on the Site intranet.

The Planner completes a PMWP Cover Sheet and develops the PMWP. The actual cover sheet may be modified to add organizations to review and approve the package based upon the results of the planning process.

#### 7.3.2 PMWP Formatting Instructions

##### Planner

- Enter the PMWP CONTROL #, Page # and REV# in header of all PMWP pages. The PMWP control number can be obtained from the PM Coordinator
- Define the scope
- Enter applicable Vendor Manuals
- Enter the Craft and estimated scheduled hours (based on craft input) for each Craft
- List parts or special equipment that is needed to support performance of the PMWP. **IF** a BOM is needed, then refer to Section 4.3.2.6
- Develop Precautions and Limitations that apply to the PMWP as follows:
  - Inform the performer of specific requirements and PPE for the requested work and hazardous conditions and its potential effects in the precautions and limitations section

- Precautions alert document performers to required actions and conditions that represent potential hazards to personnel or possible damage to equipment, or that establish abnormal conditions. Limitations define boundaries that are **NOT** to be exceeded
- Develop Prerequisites that apply to the PMWP. Consider the following in preparing prerequisites:
  - The safety of personnel, the general public, and the environment
  - The protection of equipment and material
  - Inadvertent, incorrect or omitted actions that could cause system operation, shutdown or could result in an OSR/TSR violation
  - Limitations identified in approved vendor information and design documents
  - Unusual alarms that could occur or are expected to occur as a result of the performance of work
  - Actions that could result in automatic shutdown of any engineered safety features
  - The reduction of personnel or environmental exposure to radiation, contamination, electrical shocks, dangerous chemicals, fire hazards, confined spaces, and moving or rotating equipment
  - Specific training or qualification requirements specific to the WP
  - Performance of a pre-evolution brief or Job Task Briefing as required by the COOP Manual
  - Review of the applicable MSDS sheets
  - BOM/MAORF inventory and material verification
  - Any preparatory field activities that are required to be completed before proceeding with the specific task instructions
  - Verifying the operability of systems or components before removal from service, for safety items addressed in AB Documents
  - Confirming the correct system lineup
  - Enter applicable remedial actions
- Develop task steps that provide:
  - Clearly understood text
  - Appropriate level of detail
  - Concise instruction steps in a logical sequence using skill-of-craft methodology, as required.
  - Coordination of multiple actions
  - Implementation of the safety and compliance controls
- Develop specific task steps required to complete the requested work with input from (as appropriate):
  - Maintenance
  - Engineering
  - Safety SMEs
  - Quality
  - Metrology Laboratory
  - Other organizations required by the WP
- Develop task steps, based on skill-of-the-craft, identified hazards, safety and compliance controls, and task complexity, and include:
  - Specific interim and final witness, inspection, or verification points, as identified by Engineering, Safety, or Quality

**NOTE:**     *Check-off spaces **Should** be used instead of signatures for all work steps that do not require witness, inspection, verification points, or data collection.*

- Signatures are required for steps needing inspection, verification, such as witness points and verification of activities, or data collection

- Identification of steps that could initiate an equipment shutdown or transient or the initiation or interruption of any process action
- Identification of steps that inform the operations personnel of expected alarms or equipment operations
- Specific radiological control hold points, as identified by Radiological Safety
- Signature by SM or work authorizing authority authorizing activities which are cited or credited in AB documents
- Refer to the *Writing Instruction Guide* for guidance in writing action steps

### **Post Maintenance Test & Data Disposition**

#### **Engineering, RM, Maintenance, Planner**

Develop PMT requirements, and provide the following:

- Purpose describing the intent of the PMT
- Precautions and limitations specific to the PMT
- Prerequisites specific to the PMT
- PMT task instructions specific to the PMT
- PMT acceptance criteria and verification

#### **Planner**

- Develop a step for the RM to compare the work accomplished with the PMT or inspection performed to determine that all work is acceptable prior to returning the equipment or system to normal service per COOP, if required
- Attach the PMWP Cover Sheet and obtain Concurrence and Approval Signatures

### **7.3.3 Concurrence and Approval**

The Planner and RM sign and date the PMWP Cover Sheet.

If a change, other than administrative or editorial, is made after concurrence signatures are obtained, then the RM **SHALL** delete all previous concurrence signatures and obtain concurrence signatures again.

The planner then obtains comments and concerns from representatives of the applicable organizations. After resolution, the planner then obtains signatures from representatives of the organizations designated as "Required" in the JHIT performed in Chapter 3 on the PMWP Cover Sheet.

If a nuclear safety review is required, then the RM submits the PMWP for screening and places the SES in an appendix of the PMWP before issuing for work. Screen the PMWP in accordance with *Operations Review Requirements*.

When all requirements for approval are met, the RM signs and dates the Cover Sheet, identifies the start date and frequency and returns the approved PMWP to the PM Coordinator.

The PM Coordinator forwards a completed Preventive Maintenance Change Request (PMCR) to the Equipment Maintenance/Preventive Maintenance (EM/PM) Administrator with the following information:

- PMWP control number, or revision number and date
- PMWP frequency
- First execution date

- Equipment description
- Lead craft and specific number of required craft(s) or support personnel

The PM Coordinator then forwards the PMWP to the Planner who forwards it and associated developmental materials to Document Control. These documents will be stored in two files.

- Working file contains a copy of the original PMWP
- History file contains the original PMWP, developmental references, SES/ORC/PRC documentation (if applicable), comment resolution sheets, initial ASF/JHA, as applicable etc.

Document Control then processes the PMWP and the EM/PM Administrator updates the Maintenance Management System database, as necessary.

#### 7.3.4 PMWP Execution

The PM Coordinator **SHALL** print Preventive Maintenance Order reports and obtain working copies of PMWP from Document Control and forward PMOs and PMWPs to the applicable department for execution.

If the work will affect the design, function or method of performing the function of a safety system, structure or component or TSR/OSR described in the safety analysis or other information relied on as the AB, then the RM **SHALL** determine the specific remedial action and reference the applicable AB Document or DOE approved remedial actions. If the required actions are not specified in the AB Document and have not been approved, they must be documented and reviewed by Nuclear Safety and ORC/Independent Review Committee.

Prior to commencing work, the RM **SHALL** screen the activity using the ASF in accordance with Chapter 2 each time the PMWP is used. (It is anticipated that all 3 questions in Screen 1 of the ASF will be answered Yes for routinely performed activities, thereby requiring no further documentation.)

The Job Supervisor performs a walkdown and a JHIT/JHA in accordance with the following:

- 1) If the PMWP meets the criteria of Minor Maintenance, as defined in Chapter 2, and has a periodicity less than "Annually", then perform the hazard analysis in accordance with Chapter 8, Minor Maintenance. Chapter 8, Appendix 8.2 provides a Minor Maintenance Hazards Analysis Matrix with the corresponding work activity description listed in Appendix 8.1 to aid supervisors and workers in identifying the applicable hazards and controls. If the PMWP activity is not listed in Appendix 8.1, then a JHIT and JHA **SHALL** be performed in accordance with Chapter 3.
- 2) If the PMWP does not meet the criteria of Minor Maintenance, as defined in Chapter 2, but has a periodicity less than "Annually", then a JHA **SHALL** be performed in accordance with Chapter 3. However, this JHA **may** be used for future PMWPs provided that the conditions haven't changed.
- 3) If the PMWP has a periodicity of "Annual" or greater, then a JHIT and JHA **SHALL** be performed in accordance with Chapter 3 each time the PMWP is performed.

The Job Supervisor conducts a Pre-Evolution Briefing or a Job Task Briefing as required by the COOP Manual and executes the PMWP. The JHA **SHALL** be reviewed during the pre-evolution brief.

**NOTE:** *The maintenance organizations performing the PMWP **SHALL** comply with the requirements of the COOP Manual for conduct of work and procedural compliance.*

The Job Supervisor performs the close-out review of PMWP and forwards the completed PMWP and Preventive Maintenance Order to PM Coordinator for Preventive Maintenance Order close-out.

As applicable, the Job Supervisor initiates a WCF to correct discrepancies outside the scope of the PMWP.

The PM Coordinator then closes out Preventive Maintenance Order in the Maintenance Management System database as applicable, files the PMWP and Preventive Maintenance Order and initiates a PMCR, if needed.

### 7.3.5 Revisions and Changes

#### 7.3.5.1 Revision and Change Determination

**NOTE:** *Forwarding a PMCR to planning will ensure that the master PMWP is updated to reflect the required change.*

For those changes where the scope, design intent, or hazard controls have changed, a new ASF **SHALL** be performed in accordance with Chapter 2, and a new JHIT and JHA **SHALL** be performed in accordance with Chapter 3.

The Initiator **SHALL** process a PMCR in accordance with Section 7.3.5.4, if the requested change affects any of the following:

- The scope or intent of the job
- Hardware important to criticality safety, the intent of the SES/USQD, or an AB Document or OSR/TSR
- A hazard control measure identified on the JHA or the PMWP (e.g., ALARA review, RWP)
- System/component model number, material specification (that does not meet original fit, form or function as determined by Engineering), material certification or test data, or system component configuration
- Hold points, inspections, verifications and witness signoffs

Otherwise process per Section 7.3.5.2. below.

#### 7.3.5.2 Pen and Ink, and Page Changes

Use Pen and Ink changes for items that do not meet the requirements of a revision. Pen and Ink changes must have the concurrence of the organization the change affects.

**NOTE:** *Use of correction fluid or correction tape is not allowed.*

Make pen and ink changes to working copy with an indelible ink pen as follows:

- Draw a single line through the entry to be changed
- Make the desired entry into the PMWP
- Draw a vertical line in the left-hand margin next to the change, initial and date the change, and annotate PMCR number
- Complete PMWP
- Initiate PMCR in accordance with Section 7.3.5.4 to update the PMWP in document control

### 7.3.5.3 PMCRs for Maintenance Management System Database Changes

These changes include; scheduling , frequency, craft changes, cancellations and deferrals, The Initiator **SHALL** complete PMCR per Section 7.3.5.4.

### 7.3.5.4 Instructions for Completing PMCR

The Initiator completes Blocks 1 and 2 and enters the reason for the request in Block 3.

Enter the justification for the change in Block 4 and sign. Be as specific as possible (refer to definitions for PM cancellations and PM deferrals).

Submit the PMCR to the RM for disposition.

**NOTE:** *RM accepts responsibility for all consequences resulting from PMCRs approved by their designees.*

#### **RM**

Approve or disapprove the PMCR by checking the appropriate box in Block 5. If the request is disapproved, state reason for disapproval in the space provided.

Enter the WBS/Charge Number in the space provided.

Submit the PMCR to PM Coordinator for disposition.

#### **PM Coordinator**

Process PMCR as follows:

- Assign a PMCR Number and annotate it in Block 6
- Forward PMCR to planning or EM/PM Administrator as applicable

#### **Planner**

Changes to PMWP as follows:

- Obtain the original PMWP from Document Control
- Revise the PMWP as required, and route for concurrence and approval per Section 7.3.3
- **IF** pen and ink change, **THEN** make changes to original (change bars, PMCR#, initial and date in left margin.) Annotate PMCR# as Pen & Ink with date on PMWP cover sheet
- Transmit the completed PMCR and original pages that were replaced to Document Control to be placed in the PMWP history file
- Send copy of PMCR to PM Coordinator for filing

#### **EM/PM Administrator**

Changes to Maintenance Management System database (only) as follows:

- Assign PMCR #
- Update Maintenance Management System Database
- Complete Block 6 of PMCR
- Forward copy of original to initiator and retain original in file



**APPENDIX 7.1 - PREVENTIVE MAINTENANCE WORK PACKAGE COVER SHEET**

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE  
PREVENTIVE MAINTENANCE WORK PACKAGE (PMWP) COVER SHEET**

Page 1 of 1

PMWP CONTROL NO. \_\_\_\_\_

REVISION NO. \_\_\_\_\_

TITLE: \_\_\_\_\_

Planner:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

**CONCURRENCE:**

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, can be performed safely and contains all of the required controls from the JHA.

Responsible:  
Organization

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

H&S:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

Engineering:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

RAD:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

Crit Safety:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

Nuc Safety:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

Environmental:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

Fire Protection:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

Quality:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

ORC/PRC:  
(Review Only)

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Initials ORC/PRC Meeting No. Date

**APPROVAL:**

Responsible:  
Manager (Rep)

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Name Signature Date

PMWP Start Date: \_\_\_\_\_

PMWP Frequency: \_\_\_\_\_  
(i.e., Annual, Quarterly, Monthly)

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**APPENDIX 7.2 - PREVENTIVE MAINTENANCE WORK PACKAGE FORMAT**

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PMWP CONT. \_\_\_\_\_

Page X of X

REV \_\_\_\_\_

SCOPE

Applicable Vendor Manuals:

Craft /Hrs:

Parts/Special Equipment Required:

Instructions:

**Precaution & Limitations:**

**Prerequisites (including remedial actions):**

**Task Steps:**

**PMT & Data Disposition**

**APPENDIX 7.3 - PREVENTIVE MAINTENANCE CHANGE REQUEST**

**PREVENTIVE MAINTENANCE CHANGE REQUEST (PMCR)**

1. Description:

PM Control No. \_\_\_\_\_ Current PM Rev.: \_\_\_\_\_  
EM/PM No.: \_\_\_\_\_  
PM Work Order: \_\_\_\_\_

2. EM/PM Information:

Equipment Name: \_\_\_\_\_ Manufacturer: \_\_\_\_\_  
Description: \_\_\_\_\_  
Serial # \_\_\_\_\_ Model # \_\_\_\_\_  
Old EM/PM # \_\_\_\_\_ Priority Code \_\_\_\_\_  
Property # \_\_\_\_\_  
Ops Area \_\_\_\_\_ Bldg. \_\_\_\_\_ Floor \_\_\_\_\_ Room \_\_\_\_\_ Col. \_\_\_\_\_

3. Reason for Request:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Justification for Change:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Requested by: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Print Name/Ext./Bldg. No. Signature Date

5. Request: Approved Disapproved: WBS/Charge No.: \_\_ (Required)

Reasons if disapproved:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Responsible Supervisor: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Print Name/Ext./Page Signature Date

6. Disposition By:

PMCR No. \_\_\_\_\_ Pen/Ink \_\_\_\_\_ Revision \_\_\_\_\_ Other \_\_\_\_\_ Copy to Originator \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Disposition By: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Print Name/Ext./Page Signature Date

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## CHAPTER 8 - MINOR MAINTENANCE

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### 8.1 PURPOSE

This chapter provides the requirements for the conduct of minor maintenance.

### 8.2 DISCUSSION

Minor maintenance is an accepted approach to performing maintenance, which is defined as minor and routine in nature, in a more efficient manner without compromising safety. Minor maintenance activities will still require the ISM approach, but in a graded and tailored manner. This chapter describes the process to determine and perform minor maintenance activities. Minor maintenance applies to steelworkers and non-bargaining unit trades.

### 8.3 INSTRUCTIONS

#### 8.3.1 Minor Maintenance Determination

The Minor Maintenance Work Activity Description, Appendix 8.1, provides a categorization of typical Minor Maintenance activities. The trend codes listed in Appendix 8.1 correspond to the Minor Maintenance Hazard Analysis Matrix in Appendix 8.2, which aids the worker/supervisor in evaluating the job hazards. If the Minor Maintenance activity is not listed in Appendix 8.1, then a JHIT and JHA **SHALL** be performed in accordance with Chapter 3. The RM **SHALL** ensure that this activity will not result in a temporary or permanent modification. The RM **SHALL** also ensure that the system, structure or component will be restored to compliance with its functional criteria.

All Site work involves inherent safety hazards which must be individually evaluated and engineering and administrative controls/barriers placed to protect the workers from identified hazards. Crafts' manager/supervisor and the craft personnel who will execute work must jointly agree work is safe to carry out using the Minor Maintenance Hazard Analysis Matrix (Appendix 8.2) or JHA performed per Chapter 3, and associated permits. Any work determined by H&S to require a work plan to control hazards (i.e., asbestos, lead, beryllium, etc. ) **SHALL** be performed as a work package, not minor maintenance.

#### 8.3.2 Minor Maintenance Tracking

Minor Maintenance is tracked using the following elements, as appropriate:

- Each minor maintenance sub-category, as determined by the Responsible Manager, will be assigned a Work Control Number and will be entered into the WCF database.
- The RM determines what is defined as a minor maintenance sub-category in their facility, for tracking purposes. An example might be to issue a minor maintenance Work Control Number for each type of craft.

If a tracking system is established to properly control the minor maintenance, organizations **may** establish one WCF for each type of repetitive minor maintenance. Multiple minor maintenance activities may be conducted against an open WCF. The organization **SHALL** conduct and close individual work activities using the Minor Maintenance Documentation Report (Appendix 8.3).

### 8.3.3 Work Instructions

All Minor Maintenance activities will require an adequate assessment of hazards and controls. Appendix 8.2 provides a Hazard Identification Matrix with the corresponding work activity description listed in Appendix 8.1 to aid in identifying the hazards and applicable controls.

Procurement of materials and replacement parts for minor maintenance **SHALL** be performed in accordance with Chapter 4.

Prior to commencing work, the RM **SHALL** screen the activity using the ASF in accordance with Chapter 2. (It is anticipated that all 3 questions in Screen 1 of the ASF will be answered Yes, thereby requiring no further documentation.)

The Maintenance Manager **SHALL** review training requirements for those hazards identified in Appendix 8.2 that indicate a training requirement. The Training Users Manual can be referenced for regulatory training requirements. Job specific skills and craft competencies **Should** also be assessed for assigned workers.

A Job Task Briefing or Pre-Evolutionary Brief **SHALL** be performed discussing job hazards and associated controls with the workers, as defined in COOP, prior to releasing the minor maintenance activity to work.

Upon completion of the minor maintenance activity, a PJR may be required in accordance with the requirements stated in Chapter 10.

For those activities generating waste (i.e., lamps, oils, etc.) a waste management plan **Should** be in place to ensure regulatory compliance.

### 8.4 Minor Maintenance Documentation Report

Appendix 8.3 contains the Sample Minor Maintenance Documentation Report required for all Minor Maintenance activities. The RM **SHALL** enter the WCF number, Bldg. and Job Description in the space provided.

#### Prerequisites Section

The Job Supervisor **SHALL**:

- Check YES or NO in the appropriate check boxes for permits used and number
- Record any additional comments
- Notify user prior to starting work. Annotate in the box provided completion of Job Task Briefing. Obtain approval from RM before releasing work to crafts

#### Work Performance Section

Crafts **SHALL** record all work completed in the space provided. Use and attach additional sheets, if required, to record completed work.

#### PMT Performance/Operational Check Section

The Job Supervisor **SHALL** determine the PMT required and record the PMT results. This field is required for all Minor Maintenance Activities, even if a verification of work was all that was performed. Job Supervisor **SHALL** review and sign for satisfactory completion of PMT.

## APPENDIX 8.1 - MINOR MAINTENANCE WORK ACTIVITY DESCRIPTION

The table below provides the category of activity descriptions for those activities that could be performed via Minor Maintenance as defined in Chapter 2. These activities **may** be performed in radiological areas using Radiological Work Permits, as required. Refer to the following Minor Maintenance Hazard Analysis Matrix (Appendix 8.2) for assistance in identifying hazards, impacts, and controls, as related to the "Trend Codes".

TREND CODE	ACTIVITY DESCRIPTION
R01	Re-lamping - Replacement of lamps; panel board enunciator lamps (as long as panel doesn't have to be taken out of service); visual inspection, cleaning, and re-lamping of panel board indicators.
R02	Facility Rework - Rework/replacement of doors, windows, walls, ceiling/floor covering, steps, locks, office partitions, etc. (Pre-survey for asbestos/lead in materials & coatings.)
R03	Painting - General upkeep painting of equipment, offices and buildings. Painting of crosswalks and other similar markings.
R04	Restroom Rework - Rework/replacement of all restroom fixtures or plumbing (or unplug/clean out of drains), excluding backflow preventors
R05	Potable Water Filter Maintenance - Rework/replacement of filter assemblies and periodic replacement of filter cartridges (e.g., on drinking fountains, eye wash stations).
R06	Freeze Protection Inspection/Rework - Perform inspections to verify operation, TS&R of hardwired heat trace and portable heaters.
R07	TS&R Non-safety class HVAC - Inspection, cleaning, troubleshooting and minor rework (must be equivalent item material) of HVAC units. Replacement of NON-HEPA air filters and inspections.
R08	Barricades, Placards, Signs and Labels - Inspections, fabrication and placement of barricades, placards, signs and labels.
R09	Instrument Tags - Fabricate and install instrument, valve, or instrument valve tags. (No breach of system.)
R10	Troubleshooting & Rework (TS&R) of System/Equipment Problems - Troubleshooting and Rework of system/equipment problems to determine cause of malfunction and performing rework necessary to return system/equipment to service. TS&R of energized circuits <b>SHALL</b> follow the requirements of OS&IH PM, Chapter 36, <i>Electrical Safety Program</i> and Chapter 9, <i>LO/TO</i> .
R11	Control Panels (Mechanical & Electrical) - Replace missing panel covers, screws, or handles on mechanical/electrical control panels.
R12	Equipment Lube Levels - Verification of equipment lubrication reservoir levels and addition of lubricant as required.
R13	Equipment Inspection/Adjustments - Visual inspection, cleaning, packing adjustment, thermographic checks, vibration checks, etc.
R14	Security Gate/Fence Maintenance - Inspection, Cleaning, adjustment, and minor rework of security gate operating equipment and barrier arms. (Must be equivalent item material; if digging is required, use excavation permit/soil disturbance).
R15	Scaffold Assemble/Disassemble - Installation and removal of scaffolding. Includes storage relocation activities.
R16	Engineering Investigation Support - Support for engineering investigations limited to equipment access and taking of measurements or determine as-built condition, not requiring interruption of operations or disassembly of equipment. <u>No equipment configuration changes or adjustments.</u>
R17	Operations Support - Support for initial inspections, walkdowns, pre-approved operating procedure activities, as-built activity, verifying the operation/function/calibration of instruments or equipment, rigging activities.
R18	Electrical Circuits - Replacement of light switch or receptacles, ballasts, TS&R of $\leq 480v$ equipment.
R19	Minor Mechanical Rework - Rework of non-chemical, non contaminated piping systems where a permitted LO/TO is required. Rework of grating, handrails, and ironwork.
R20	Swamp Coolers - Inspection, cleaning, TS&R, and adjustment of swamp coolers (must be equivalent item material).
R21	Shop Fabrication - Fabricate/rework of equipment/systems in shop. Fabrications are permitted for non-safety class equipment and systems.
R22	Replacement of fan belts on non credited SC 3 and 4 systems.
R23	Plant Power Troubleshooting & Rework (TS&R) of System/Equipment Problems - Troubleshooting and Rework of system/equipment problems to determine cause of malfunction and performing rework necessary to return system/equipment to service. TS&R of energized circuits <b>SHALL</b> follow the requirements of <i>OS&amp;IH PM, CHAPTER 37 MAINTENANCE LINE DISTRIBUTION WORK</i> .

**APPENDIX 8.2 - MINOR MAINTENANCE HAZARDS ANALYSIS MATRIX**

	HAZARDS	P	T	M	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	R21	R22	R23	CONTROL MEASURES
1	Radiation / Contamination Work Area	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	Read and follow Radiological Work Permit.
2	Electrical Hazards		X		X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	Only qualified individuals <b>SHALL</b> perform work. Follow OS&IH PM, Ch. 36 or Ch. 37.
3	Energized Electrical Hazards	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	Install LO/TO per the OS&IH PM Ch. 9. Follow OS&IH PM, Ch. 36. Obtain Operations Manager approval for work on energized electrical equipment.
4	Energized Component/System (Mechanical, Hydraulic or Chemical)	X			X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	Install LO/TO per the OS&IH PM Ch. 9.
5	PCB Ballasts				X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	If building does not have a Waste Generating Instruction, contact Environmental for guidance. Dispose of per building Waste Stream & Residue Identification & Characterization. If ballast is leaking contact IH for guidance.
6	Confined Space Entry	X		X										X														Contact H&S. Follow Confined Space Entry Checklist & PPE.
7	Cutting/Welding/Hot Work	X	X	X					X			X	X	X				X	X	X	X		X	X	X			Contact H&S & FD. Follow Hot Work Checklist & PPE.
8	Flammable/Combustible Materials					X	X			X		X		X		X				X	X		X		X			Ensure proper fire protection controls are established. Use appropriate PPE. Review and retain copies of the MSDSs.
9	Fall Hazards Present		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	Use approved ladder, scaffolding, lift, or fall protection equipment. OS&IH PM, Ch. 39, 40, and 42.
10	Roof Work		X			X	X			X	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	Obtain permission from Shift Manager. Stay on walkways. Stay at least 6 ft from edge of roof.
11	Ladders				X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Do not go above second step from the top on step ladders. Maintain a 3 to 4 ratio for extension ladders, and extend them three feet above the landing. Always face ladder when climbing up or down. Do not lean out of ladder frame.
12	Scaffolding		X			X	X			X	X	X	X	X			X	X	X	X	X	X	X			X	X	Do not lean over railing. Only qualified individuals <b>SHALL</b> erect scaffolding. OS&IH PM, Ch. 40.
13	Pressure Hazards		X						X		X			X		X	X			X	X		X		X			Follow OS&IH PM, Ch. 15. LO/TO per the effective procedure.
14	Asbestos Exposure		X			X		X				X		X					X	X	X	X	X	X				Read and follow approved asbestos procedures. OS&IH PM, Ch. 19. Formal planning is required if asbestos abatement is required.
15	Hazardous Materials					X	X		X			X	X	X		X	X	X		X	X	X	X	X	X			Contact H&S for monitoring and control requirements. Read and understand MSDS. Know location of nearest spill kit.
16	Hazardous Waste Operations		X									X		X							X							Use PPE specified by H&S. Dispose of waste per Bldg. Waste Stream & Residue Identification & Characterization and Non-routine Waste Origination Log. OS&IH PM Ch. 22.
17	Beryllium Hazards		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	Mandatory to involve H&S in planning process if activities are performed in areas that may contain Beryllium contamination and expose workers to inhalation hazards.
18	Lead Exposure		X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X		X		X			Mandatory to involve H&S in planning process if activities are performed in areas that may expose workers to inorganic lead.

P= Items that require a permit / checklist / form. | T = Items where formal training may be required. | M = Medical Monitoring may be required.



APPENDIX 8.2 - MINOR MAINTENANCE HAZARDS ANALYSIS MATRIX

	HAZARDS	P	T	M	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	R21	R22	R23	CONTROL MEASURES
19	Respiratory Hazards		X	X		X	X	X	X			X	X	X			X		X	X	X	X	X	X	X	X	X	Use PPE as specified by H&S & Radiological Engineering/Operations. Ventilate area. HSP 7.03.
20	Aerial Lifts					X	X			X	X	X	X	X			X	X		X	X	X	X	X		X	X	Know and understand operation of lift. OS&IH PM, Ch. 41
21	Heavy Equipment		X									X		X							X		X				X	Know and understand operation of equipment.
22	Hoisting & Rigging Operations		X	X								X		X							X		X				X	Only qualified individuals to perform work. OS&IH PM Ch. 12. Critical Lifts require formal planning and cannot be performed as minor maintenance.
23	Process Waste/Steam Systems													X			X		X	X	X							Look and listen for signs of leaks. LO/TO if required.
24	Temperature Extremes					X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	During hot weather, be aware of the signs of heat stress or exhaustion. Drink plenty of fluids. During cold weather, dress appropriately and watch for signs of hypothermia. Contact H&S if heat/cold stress monitoring needed.
25	Noise				X	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	Wear hearing protection if in high noise area. OS&IH PM Ch. 33.
26	Poor Lighting				X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	Use flashlight or temporary lighting, as needed.
27	Vehicle Traffic					X	X					X		X				X	X		X							Be aware of surroundings. Use Flag-Person if necessary.
28	Dust				X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	Contact H&S for an exposure assessment and identification of required controls. Contact Environmental for fugitive emissions.
29	Wet/Slippery Surfaces					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Caution employees to be sure of footing. If possible, dry area prior to working.
30	Animals/Insects				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Be cautious and look for snakes, rodents, spiders, and flying insects. Inform employees of possible problems.
31	Adjacent Water Hazard				X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X			Use Ground Fault Circuit Interrupter receptacles.
32	Uneven Terrain				X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		X	Caution employees to watch for areas which could cause sprains and strains. Be sure of footing. Wear substantial foot protection.
33	Pinch Points					X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Look for and avoid pinch points. Use caution when tipping or moving heavy objects. Wear leather gloves.
34	Falling Objects				X	X	X	X				X		X			X		X	X	X	X	X			X	X	Be aware of possible falling objects. If required, wear hard-hat.
35	Sharp Objects				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Cut away from body. Protect sharp object/edges when not in use. Use knives with caution. Wear leather gloves.
36	Overhead Obstructions				X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	Be aware of possible obstructions. If required, wear hard-hat. OS&IH PM, Ch. 34
37	Site Control (Signs/Barricades)				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			Obey all posted signs and barricades. Establish boundary if necessary. OS&IH PM, Ch. 8
38	Remote Work Area				X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	Maintain 2-way radio communication.
39	Housekeeping				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Housekeeping SHALL be maintained as work progresses.
40	Environmental Impact/Requirements				X	X	X		X			X				X						X						Contact Environmental for guidance.

P= Items that require a permit / checklist / form. | T = Items where formal training may be required. | M = Medical Monitoring may be required.

**APPENDIX 8.3 - MINOR MAINTENANCE DOCUMENTATION REPORT**

WCF Number: \_\_\_\_\_ Bldg.: \_\_\_\_\_ Charge #: \_\_\_\_\_  
Job Description (See WCF): \_\_\_\_\_

**Prerequisites** (Check all that apply, attach **any** permits or indicate permit number per governing document)

	<u>YES</u>	<u>NO</u>	<u>Permit No. / Comments</u>
Confined Space	<input type="checkbox"/>	<input type="checkbox"/>	_____
LO/TO Required	<input type="checkbox"/>	<input type="checkbox"/>	_____
Radiological Work Permit Required	<input type="checkbox"/>	<input type="checkbox"/>	_____
Beryllium Operations Area	<input type="checkbox"/>	<input type="checkbox"/>	_____
Hotwork	<input type="checkbox"/>	<input type="checkbox"/>	_____
Live Electrical	<input type="checkbox"/>	<input type="checkbox"/>	_____
Elevated Work	<input type="checkbox"/>	<input type="checkbox"/>	_____

Additional Comments/Prerequisites and/or Special Tools/Equipment: \_\_\_\_\_

Job Task Briefing Performed ☐ Pre-Ev Briefing Performed ☐ (Check which one performed)  
(Attach Completed Form)

User Notified: ☐ \_\_\_\_\_ (Name of Person Notified)

Work Authorized by Responsible Manager (or Designee) to perform work:

RM: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
(or Designee) Name Signature Date

**Work Performance:**

Record Work Performed: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PMT Requirements/Operational Check:**

☐ Operational Check Performed Satisfactory

- OR -

☐ PMT Performed (record PMT performed and results): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Feedback:** (Attach Post Job Review Checklist, if needed)  
\_\_\_\_\_  
\_\_\_\_\_

**Completion Review:**

Job Supv.: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

Craft Hours: \_\_\_\_\_

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## CHAPTER 9 - EMERGENCY WORK

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### 9.1 PURPOSE

This chapter describes the requirements for initiating, documenting, and performing Emergency Work. Emergency Work is defined as any work that requires immediate action to prevent serious personal injury, harm to the environment, a breach to security, or a serious loss of property. Emergency Work Processes are not a substitute for emergency response such as fire fighting, but can support emergency response once the emergency is under control and the area stabilized.

### 9.2 DISCUSSION

From time to time it is necessary to take emergency actions to prevent injury to personnel and equipment, and to protect the public and environment. This does not mean that Priority Level 1 type work should be performed to meet a schedule or mission activity, but for those items that require immediate attention as defined as Priority Level 1 activities. The five functions of the Site's ISM system should be followed when conducting all work to prevent or mitigate any further injury to personnel or the environment. This chapter will provide the instructions for documenting and performing emergency work. It is the line manager's responsibility to ensure this work is performed safely.

### 9.3 INSTRUCTIONS

#### 9.3.1 Emergency Work Determination

Any person **may** contact the appropriate SM or RM if an emergency situation exists.

The SM, or RM for non-nuclear facilities, **SHALL** determine if the situation requires Emergency Work. If a determination is made that Emergency Work is warranted, then initiate Emergency Work actions per Appendix 9.1.

A WCF is not required prior to initiating Emergency Work.

The RM or SM **SHALL** inform the Shift Superintendent, Engineering, Quality Assurance, and all appropriate safety disciplines, as required, of the initiation of Emergency Work.

The RM **SHALL** categorize and report Emergency Work to the DOE in accordance with *Occurrence Reporting Process*.

#### 9.3.2 Performance & Documentation

The performance of the emergency work **SHALL** be in accordance with the fundamentals of the Site's ISM system. If time permits, a JHIT and JHA **Should** be performed in accordance with Chapter 3, prior to performing any work.

Document all work performed on the Emergency Action Work Log (EAWL), Appendix 9.1.

An environmental checklist is not required for these activities. However, documentation of activities **Should** be provided to Environmental for subsequent evaluation.

Any emergency work governed by initiation of the RCRA Contingency Plan must be reported to Environmental.

### 9.3.3 Closure

The Job Supervisor **SHALL**:

- Initiate WCF and obtain work control number
- Ensure work, inspections, engineering dispositions or nonconforming conditions, and testing required by the EAWL are completed and indicated in the WP
- Notify the RM for proper disposition if outstanding deficiencies are noted during the EAWL closure, which are **not** covered in the original scope of the EAWL
- Ensure all required documents are properly filled out and contained in the EAWL
- Complete the Job Supervisor closure section on the EAWL
- Issue a new WCF in accordance with Chapter 2, for all open deficiencies
- Ensure all work and testing specified in the EAWL has been completed satisfactorily and documented in the WP as required

If a Non-Conformance Report applies to the EAWL/WCF, then Engineering **SHALL** perform an operability assessment on components or systems prior to returning to service; verify the following are completed and complete the Engineering closure signature line as applicable:

- Perform a post modification walkdown to redline drawings
- Redlines must include all administrative clarifications, minor design changes, and Engineering Change Request field changes per DES-210
- Deliver redlined interim controlled drawings to Site Design Document Control
- Complete the Engineering closure signature line, as applicable

Quality **SHALL**:

- Ensure that required signatures and documents are included in the EAWL
- Verify that a PMT is performed and documented, acceptance criteria is met, and a Non-Conformance Report has been submitted and dispositioned to resolve hardware/testing problems
- Verify the completed EAWL meets the requirements for a quality record, in accordance with *Records Management Guidance for Record Sources*

The RM **SHALL** ensure that Quality signs the closure signature line of the EAWL.

The RM **SHALL** review the EAWL to ensure that all required reviews are complete including all required signatures. This also includes the performance of a SES/USQD.

The RM then approves the EAWL closure and signs the closure section of the EAWL. The activity is then closed in the WCF database.

**APPENDIX 9.1 - EMERGENCY ACTION WORK LOG & INSTRUCTIONS**

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE  
EMERGENCY ACTION WORK LOG COVER SHEET**

WORK CONTROL NO. \_\_\_\_\_

Page \_\_\_\_ of \_\_\_\_

TITLE: \_\_\_\_\_

**ATTENDANCE AT EMERGENCY LOCATION:**

Based on my signature, I agree that I will be present at the scene of the emergency to provide guidance for resolving the emergency situation safely and that I will provide necessary inspection, witness, or verification points as required to indicate all work was performed in accordance with current standards.

Responsible	_____	/	_____	/	_____
Organization:	Name		Signature		Date
H&S:	_____	/	_____	/	_____
	Name		Signature		Date
Engineering:	_____	/	_____	/	_____
	Name		Signature		Date
RAD:	_____	/	_____	/	_____
	Name		Signature		Date
Crit Safety:	_____	/	_____	/	_____
	Name		Signature		Date
Nuc Safety:	_____	/	_____	/	_____
	Name		Signature		Date
Environmental:	_____	/	_____	/	_____
	Name		Signature		Date
Fire Protection:	_____	/	_____	/	_____
	Name		Signature		Date
Quality:	_____	/	_____	/	_____
	Name		Signature		Date

**APPROVAL:**

Approved to Work as an Emergency Priority:

Responsible:	_____	/	_____	/	_____
Manager (Rep)	Name		Signature		Date

**CLOSURE CONCURRENCE:**

Based upon my personal review of this work package and inspection of the work site, all of the work and retest is listed in this package and has been satisfactorily completed and there are not any additional testing or maintenance actions required to restore the affected system to service.

Job Supervisor:	_____	/	_____	/	_____
	Name		Signature		Date
Engineering:	_____	/	_____	/	_____
	Name		Signature		Date
Quality	_____	/	_____	/	_____
	Name		Signature		Date
ORC (Review Only)	_____	/	_____	/	_____
	Initials		ORC Meeting Number		Date

**CLOSURE APPROVAL:**

Responsible:	_____	/	_____	/	_____
Manager (Rep)	Name		Signature		Date

**APPENDIX 9.1 - EMERGENCY ACTION WORK LOG & INSTRUCTIONS**

Page \_\_\_\_ of \_\_\_\_.

**Responsible Management (RM)**

- 1.a) Determine whether or not Emergency Work is warranted, if so, record the scope of the Emergency Work below:

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**RM (Designee):** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

- b) Obtain authorization to perform emergency work on or near energized electrical equipment per Appendix 1 of OS&IH PM, CHAPTER 36, as required.

\_\_\_\_\_  
Name Signature Date

- c) Delegate a supervisor to control the Emergency Work actions (i.e., EAWL Coordinator) and oversee maintaining the Emergency Action Work Log (EAWL).

Name: \_\_\_\_\_ Title: \_\_\_\_\_

**RM (Designee):** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

**RM, EAWL Coordinator**

- d) Indicate below the personnel, including vendors, required to be present during the Emergency Work:

Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____

**RM/EAWL Coord.:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date

## Page \_\_\_\_\_ of \_\_\_\_\_.

**Actions taken:**

**APPENDIX 9.1 - EMERGENCY ACTION WORK LOG & INSTRUCTIONS**

Page \_\_\_\_ of \_\_\_\_.

**Responsible Organization, EAWL Recorder, Engineering**

5) Record all material/parts below for the Emergency Work.

**NOTE**

**ENGINEERING MUST REVIEW AND CONCUR WITH THE USE OF ALL PARTS AND MATERIALS FOR THOSE ACTIVITIES THAT ARE SITED OR CREDITED IN AUTHORIZATION BASIS DOCUMENTS**

Item # \_\_\_\_\_ Name \_\_\_\_\_  
Size \_\_\_\_\_ Material \_\_\_\_\_  
Mfg. Part # \_\_\_\_\_ Model # \_\_\_\_\_  
Catalog # \_\_\_\_\_ Heat # \_\_\_\_\_  
Lot # \_\_\_\_\_ P/O # \_\_\_\_\_ Qty \_\_\_\_\_ Unit \_\_\_\_\_  
Vendor Info: \_\_\_\_\_

Item # \_\_\_\_\_ Name \_\_\_\_\_  
Size \_\_\_\_\_ Material \_\_\_\_\_  
Mfg. Part # \_\_\_\_\_ Model # \_\_\_\_\_  
Catalog # \_\_\_\_\_ Heat # \_\_\_\_\_  
Lot # \_\_\_\_\_ P/O # \_\_\_\_\_ Qty \_\_\_\_\_ Unit \_\_\_\_\_  
Vendor Info: \_\_\_\_\_

Item # \_\_\_\_\_ Name \_\_\_\_\_  
Size \_\_\_\_\_ Material \_\_\_\_\_  
Mfg. Part # \_\_\_\_\_ Model # \_\_\_\_\_  
Catalog # \_\_\_\_\_ Heat # \_\_\_\_\_  
Lot # \_\_\_\_\_ P/O # \_\_\_\_\_ Qty \_\_\_\_\_ Unit \_\_\_\_\_  
Vendor Info: \_\_\_\_\_

Item # \_\_\_\_\_ Name \_\_\_\_\_  
Size \_\_\_\_\_ Material \_\_\_\_\_  
Mfg. Part # \_\_\_\_\_ Model # \_\_\_\_\_  
Catalog # \_\_\_\_\_ Heat # \_\_\_\_\_  
Lot # \_\_\_\_\_ P/O # \_\_\_\_\_ Qty \_\_\_\_\_ Unit \_\_\_\_\_  
Vendor Info: \_\_\_\_\_

**Engineer:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Name Signature Date



This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

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## CHAPTER 10 - POST JOB REVIEWS & FEEDBACK

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### 10.1 PURPOSE

The purpose of this chapter is to provide the requirements for performing feedback by the use of:

- Post Job Reviews (PJR)
- Corrective Action Plan Input

### 10.2 DISCUSSION

A significant amount of very useful informal feedback is being provided at all levels throughout the work planning and execution process that fosters safer, more effective work conducted at the Site. This chapter provides an avenue whereby personnel can provide formalized input to help identify strengths and weaknesses in order to improve the processes. Identification and elimination of performance weaknesses through effective PJRs lead to an upward spiral in performance that increases overall safety and health of workers and the public, protection of the environment, while also improving efficiency and mission performance. The feedback obtained from these PJRs is not concerned with right or wrong, but with gaining information to improve the processes under discussion.

Lessons Learned are a good practice or innovative approach that is captured and shared to promote repeat application, or an adverse work practice or experience that is captured and shared to avoid recurrence. To determine if Lessons Learned should be shared, ask if there is the potential for this deficiency, event, adverse condition or safety issue to exist in, or to affect other buildings, operations, activities or organizations. If the answer is "yes", the lessons **Should** be shared.

### 10.3 INSTRUCTIONS

#### 10.3.1 Criteria for Conducting PJRs:

The PJR checklist **SHALL** be available to allow the worker to provide feedback at any given opportunity. The following is a list of criteria that applies to all types of work for which the Work Team **SHALL** complete the PJR Checklist, which is found in Appendix 10.1:

- ASF Screen, score in the "MEDIUM" or "HIGH" category
- When new/special technology or techniques were used
- If the job tasks resulted in a recordable, or other significant incident, such as regulatory noncompliance or environmental damage/harm
- If a worker was injured during the performance of work
- Work defined as Emergency Work in accordance with Chapter 3
- When requested by anyone involved in the performance of work

The Job Supervisor **SHALL** conduct the PJR for the planning and performance of the work if the above criteria are met. This should be performed with the work team when practical and submitted to the RM.

The RM **SHALL** review the PJR Checklist and evaluate if any lessons-learned or areas for improvement were identified. If lessons-learned, recurring issues or areas for improvement were identified, then the RM **SHALL** submit this information to the responsible organization's

Lessons Learned Point of Contact for inclusion into the lessons learned program in accordance with the *Site Lessons Learned Generic Implications Requirements Manual*.

If the comments identified during the PJR can be corrected immediately, then the RM **SHALL** ensure the comments are corrected in a timely manner and provide feedback back to the work team.

#### 10.4 Instructions for completing the Post Job Review Checklist.

1. Enter the work document number and the date the form was completed.
2. Enter the name of the Job Supervisor who was responsible for the performance of the work. (This person **SHALL** lead the PJR.)
3. Evaluate how well the activity went. Check the appropriate box, and provide comments to clarify needs identified during the work or to suggest improvements. In addition to mentioning areas for improvement, when the process is excellent it can be beneficial to say why it went so well. This positive feedback may increase the likelihood that the performance will be repeated.

##### **Additional Information to clarify the evaluation**

The following provides some narrative descriptions for some key questions on the PJR checklist.

1. ***Safety Barriers Were Effective (Item 1)*** is intended to capture issues and suggestions related to the adequacy of the safety during the work. The review **Should** consider the adequacy of the safety hazard identification, special safety equipment, safety coordination and support, pre-job briefing, and worker performance during the job.
2. ***System, Component, and Support Were Ready for Work (Item 6)*** is intended to evaluate the physical conditions needed to perform the work. It considers whether the equipment and system being worked on were in a condition where work could be performed as scheduled. This evaluation includes the coordination between planning, operations, maintenance and support organizations to ensure proper configuration and condition of work site equipment.
3. ***Support Coverage Was Adequate (Item 10)*** is intended to evaluate the coordination and cooperation between support organizations and the worker(s) performing the work. It includes having key people available when needed and having cooperation between work groups to accomplish the work.  
  
Unacceptable - Significant delays encountered, key people not available, major conflict between work groups  
Marginal - Minor delays encountered, coordination break downs, some conflict between work groups  
Good - No delays encountered, good coordination or cooperation, but not both  
Excellent - Support ready to work as planned, good coordination and cooperation between work groups
4. ***Environmental Barriers Were Effective (Item 11)*** is intended to capture issues and suggestions related to the adequacy of the environmental controls during the work. The review **Should** consider the adequacy of the environmental hazard identification, special equipment, coordination and support, pre-job briefing, and worker performance.
5. ***Work Document Was Adequate (Item 12)*** is intended to capture issues and suggestions related to the adequacy of the work document. These include evaluating that the work

instructions were appropriate and comprehensive, that instructions were clear, drawings and references were appropriate and comprehensive, tools equipment and processes used to accomplish the work were appropriate, and identifies any contributing factors that helped improve the job performance.

- 6 **Other (Description) (Item 14)** This section is provided to allow individuals to identify improvement opportunities that do not seem to fit in the other sections. It should also be used to indicate when an occurrence report has been generated as a result of an incident that occurred during performance of the work. Provide additional information in the comment section of the checklist.
7. The **Comment Section** should be used to:
- Provide clarifying information about the PJR
  - Provide specific suggestions to improve work performance in the future

Some example comments are provided below for the related number on the checklist:

- # 1 The lifting straps issued for the work were found to be damaged during the pre-job preparation. The damaged straps were returned to the tool room for disposal. Good straps were drawn from stock. We need to ensure that straps are inspected prior to being issued by the tool room.
- # 9 The Radiation Safety coverage was not available for the first two hours of the scheduled work. They were called over to support an unplanned shipment of casks. We need to follow the plan of the day or let people know when conditions change. We could have completed another work order while we waited if we had known this was going to happen.
- # 11 This work document was well prepared. The preparer walked the job down with the team prior to preparing the document. During the walkdown we considered several alternatives and determined that by removing some grating we could save more than 5 hours in the pump replacement. This worked great!
8. **Lessons Learned** This section is provided to allow individuals to submit the lessons learned from the project to the Lessons Learned program. A background of the project should be given, followed by the lessons learned during the project. Refer to the Site Lessons Learned Generic Implications Requirements Manual.

## 10.5 CORRECTIVE ACTION PROGRAM

The Corrective Action Program, as defined in *Site Corrective Action Requirements Manual*, establishes the elements and requirements for tracking and correcting deficiencies. As part of the feedback process, the RM **Should** catalog any deficiencies or issues identified through the PJR and/or job closeout process that should be entered and tracked through the Corrective Action Program. This ensures that new deficiencies are documented and managed through subsequent closure.

[illegible]

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## CHAPTER 11 – REFERENCES

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### 11.1 REFERENCES

Acquisition Procedure for Requisitioning Commodities and Services, 1-W36-APR-111

ALARA Job and Design Reviews, PRO-227-RSP-08.02

Chemical Management Manual, 1-MAN-019-CMM-001

Chemical Management Plan

Conduct of Operations Manual, MAN-066-COOP

Davis-Bacon Process, 1-W25-ADM-9.05

Decommissioning Project Plan

Department of Energy Acquisition Regulations

Department of Energy Directives

- DOE C 420.1, *Contractors Requirement Document for Facility Safety*
- DOE 430.1A, *Life Cycle Asset Management Program*
- DOE Order 151.1, *Comprehensive Emergency Management*
- DOE Order 420.1, *Facility Safety*
- DOE Order 414.1A, *Quality Assurance*
- DOE Order 4330.4B, *Maintenance Management Program*
- DOE Order 5400.5, *Radiation Protection of the Public and the Environment*
- DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*
- DOE Order 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*
- DOE Order 5480.21, *Unreviewed Safety Questions*
- DOE Order 5480.22, *Technical Safety Requirements*
- DOE Order 5480.23, *Nuclear Safety Analysis Reports*
- DOE Order 5631.2C, *Personnel Security Program*
- DOE Order 5632.1C, *Protection and Control of Safeguards and Security Interests*
- DOE P 450.4, *Safety Management System Policy*
- DOE-EM-STD -5502-94, *DOE Limited Standard Hazard Baseline Documentation*
- DOE-STD-3009-94, *DOE Standard Guide for USDOE Non Nuclear Facility SARs*
- DOE-STD-1027-92, *Hazard Categorization & Accident Analysis Techniques for Compliance with DOE Nuclear Safety Analysis Reports*
- DOE-STD-1090-99, *Hoisting and Rigging*
- DOE-STD-3011-94, *DOE Standard Guidance for Preparation of DOE 5480.22 (TSRs)*

Developing, Maintaining, and Controlling Document, PRO-815-DM-01

Environmental Approval Process for Construction/Excavation Activities, 1-F20-ER-EMR-EM.001

Health and Safety Practices Manual, PADC-1992-00635

- 1-W13-HSP-31.10, *Hot Work*
- PRO-W89-HSP-31.11, *Transfer and Storage of Plutonium for Fire Safety*
- 1-PRO-184-HSP-32.09, *Exits (Means of Egress)*
- 1-X92-HSP-34.10, *Fire Dampers*
- PRO-I83-HSP-18.05, *Administration, Inspection, and Control of Radiation Generating Devices*

Implementation of NEPA Documentation, 1-25000-EPR-NEPA.001

Inspection of Tanks or Piping Systems Pressure Vessels and Safety/Relief Devices, SM-137

Integrated Environmental Management Manual

Integrated Safety Management System Manual, 1-MAN-016-ISM

Integrated Tank Management Plan

K-H Senior Management Policy

Management of Waste Info Prior to Transmittal to the Waste Records Center, 1-PRO-077-WIPP-005

Master Agreement Subcontract Procurement, 1-PRO-453

Non-Routine Waste Origination Log Instructions, 1-I34-WO1103-NRWOL

Non-Weapons Procured Item Acceptance & Certification, 4-J44-RC&I-6600

Nuclear Criticality Safety Manual

Nuclear Materials Safeguards Manual, 1-MAN-010-NMS

Nuclear Safety Manual, 1-MAN-018-NSM

Occupation Safety and Industrial Hygiene Practices Manual, MAN-072-OS&IH PM

- Chapter 9, *Lockout/Tagout*
- Chapter 11, *Powered Industrial Trucks*
- Chapter 12, *Hoisting and Rigging*
- Chapter 15, *Pressure Systems*
- Chapter 16, *Heat and Cold Stress Prevention*
- Chapter 19, *Asbestos Management Program*
- Chapter 20, *Lead Exposure Program*
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- Chapter 26, *Ergonomics*
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- Chapter 29, *Eye & Face Protection*
- Chapter 31, *Respiratory Protection Practices*
- Chapter 32, *Emergency Shower and Eyewash Protection*
- Chapter 33, *Hearing Conservation Program*
- Chapter 34, *Head Protection*
- Chapter 36, *Electrical Safety Program*
- Chapter 37, *Maintenance Line Distribution Work*
- Chapter 38, *Batteries*
- Chapter 39, *Ladder Safety*
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- Chapter 41, *Work Platforms*
- Chapter 42, *Fall Protection and Equipment*
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